Exhibit 2

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY
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IN RE: JOHNSON & JOHNSON TALCUM POWDER PRODUCTS MARKETING, SALES PRACTICES, AND PRODUCTS LIABILITY LITIGATION

MDL No. 16-2738(MAS)(RLS)

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DEPOSITION OF JUAN FELIX, MD

TAKEN AT: Medical College of Wisconsin
LOCATED AT: 8701 Watertown Plank Road
Milwaukee, WI

June 22, 2024
9:08 a.m. to 5:12 p.m.

REPORTED BY ANITA KORNBURGER
REGISTERED PROFESSIONAL REPORTER

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APPEARANCES

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EXHIBITS

(Original exhibits attached to original transcript. Copies provided to all counsel.)

TRANSCRIPT OF PROCEEDINGS

JUAN FELIX, MD, called as a witness herein, having been first duly sworn on oath, was examined and testified as follows:

EXAMINATION

BY MR. DEARING:

Q. Good morning, Dr. Felix.

A. Good morning.

Q. For efficiency, as I just explained off the record, I'm going to start with just some general questions that I believe apply to all seven cases. And then I'll eventually move into more case-specific questions. But of course I'll tell you when I'm transitioning to something case specific so that no one is confused.

And when I just generally refer to these cases or these seven cases, I'm referring to Carl, Balderrama, Rausa, Converse, Judkins, Gallardo, and Bondurant, those seven.

These initial questions, like I said, are general in nature. But if you think you need to make a distinction with regard to your answer to a specific case, please tell me you're making the distinction or you're referring to a specific case. Otherwise I'm going to presume that your answers

cover all of them.

A. Very well.

Q. Okay. So let's start with the deposition itself. How much time did you spend preparing for the deposition?

A. Probably in the neighborhood of ten to twelve hours.

Q. And that covers all seven --

A. Yes.

Q. -- clients?

A. Yes.

Q. Was some of that time meeting with lawyers?

A. The meeting with attorneys were in addition to the twelve hours.

Q. Okay. How many hours did you spend meeting with attorneys to prepare for the deposition?

A. Probably a total of three hours.

Q. And did the attorneys provide you any documents to review in preparation for the deposition?

A. They did -- well, they provided me with the reports that I authored. They just put them in convenient folders.

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Q. Right.
A. Save me time.
Q. We do that. We're big on binders.
A. Yeah.
Q. Okay. Did they provide you any medical records or did you already have them?
A. I had the medical records for all seven of these patients.
Q. Okay. What about any studies? Did they provide you with any studies in preparation for today?
A. They did not. Most of the studies that I relied on either were provided to me by the attorneys many years ago or were the product of literature searches on my part.
Q. Did they at some point show you the notice of deposition that was served in this case?
A. Yes.
Q. In that notice we requested that you provide several things, namely, invoices for each case, but we were only provided invoices in one case, in the Carl case. Is that because you don't have them or were unable to produce them or what?
A. So I don't personally invoice. My wife keeps tally of my hours. And she invoices. And

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these cases are so -- some of these cases are so old that when I asked her, hey, did you prepare invoices, she said it would take me a week to be able to invoice these cases. And I said, well, don't worry about it. We'll do it after the deposition.
Q. Okay. What's your wife's name?
A. Betsy. B-E-T-S-Y.
Q. Felix?
A. Yes.
Q. So are you saying that you just haven't issued any invoices in the last few years or so in these cases except for Carl?
A. That's correct.
MR. DEARING: And Mark, we would still like to get the old invoices at some point.
MR. HEGARTY: Yeah, we were intending to provide all invoices for the seven cases. We provided those that have been created.
MR. DEARING: The only --
MR. HEGARTY: There are no others that have been created for these seven cases besides those we provided to you.
THE WITNESS: I think there are three invoices that we --

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MR. HEGARTY: We provided three invoices.
MR. DEARING: They were all for the Carl case, though.
MR. HEGARTY: I can look at them just to confirm that, but you probably have copies --
MR. DEARING: We're going to go over them.
MR. HEGARTY: Okay.
MR. DEARING: I was just curious why there weren't --
MR. HEGARTY: That's because they have not been created.
MR. DEARING: Okay.
BY MR. DEARING:
Q. So to be clear, you've never billed for that time in the other MDL cases?
A. I have not yet, no.
Q. Okay. And Balderrama has been around as long as Carl. Have you invoiced anything in that case?
A. Not that I'm aware of, no.
Q. Ever in the last seven, eight years since it's been created?
A. Correct.
Q. So I've deposed you a few times in the

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past, and I'm going to try not to go back over things I've already deposed you on. But let me just ask you now, since I haven't deposed you in a while, how much time do you spend actually caring for patients, in other words, reviewing surgical slides?
A. I spend probably eight hours a day doing patient care.
Q. And as a pathologist, do you actually meet with patients or is that mostly done outside their presence, the work you do?
A. Since I have been at Medical College of Wisconsin, I have only interacted once or twice with a patient in a role as a cytologist -- that's C-Y-T-O -- doing a fine needle aspiration. In my prior job I used to interact with patients on a daily basis. But here at MCW, that ceased.
Q. Okay. And how long have you been here at MCW?
A. Seven-and-a-half years.
Q. Are most of your interactions with other pathologists or surgeons, or what?
A. Yes, I interact with other pathologists in my role as a chief of anatomic pathology, both administratively and as a colleague, meaning

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looking at cases that are difficult for them. But I also interact with surgeons mostly in the department of ob/gyn, but also in the department of surgical oncology.

Q. Has the -- I'm sorry, your title is chief of pathology?

A. Chief of anatomic pathology. Two branches of pathology, anatomic and clinical. Clinical pathology is laboratory medicine.

Q. Right.

A. That does all the blood work, urine, fluids. And I did not train in that area. I limited my training to the anatomic pathology.

Q. Does anatomic pathology include autopsy service, that kind of thing?

A. Yes. I am actually the director of autopsy at MCW right now.

Q. So does -- does an anatomical pathologist do surgical pathology review --

A. Yes.

Q. -- in cancer patients?

A. Yes.

Q. And as the chief of anatomical pathology, are you actually reviewing slides on a day-to-day basis from -- straight from the surgeon, or do you

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only review when another pathologist comes to you and says hey, I need help with this?

A. So currently I am the only fellowship-trained ob/gyn trained pathologist at MCW. So I review all of the ob/gyn pathology cases that come into the laboratory every day.

Q. So you said you spend about eight hours a day looking at slides; is that right?

A. Well, I also participate in the autopsy. So, for example, yesterday we started an autopsy at ten and finished at twelve. And prior to that I was doing -- picking out slides from cases in the past to send out to molecular -- molecular labs such as Foundation or Caris. I have -- we have to look through the case and pick the best slide to send to those -- to those laboratories. And that takes about an hour to an hour and a half every day.

Q. What do those laboratories do?

A. They do next generation sequencing of the tumors in order to provide information for possible personalized therapies. Then after my autopsy, I sat down with the fellow in ob/gyn pathology and looked at all of the cases for the day. There were about 45, 50 cases yesterday. So that took us to

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about five o'clock.

Q. Okay. About how much time is typical, if there is such a thing, to look at the slides from an ovarian cancer case to diagnose it?

A. Right. So it almost always takes between 20 and 40 minutes to go through the entire case.

Q. And as a rule you're not typically polarizing those slides, are you?

A. As a general rule, I do not use polarized microscopy to look at ovarian cancer, correct. Let me modify my answer. In cases where there's very extensive disease that's very obvious, it may take as little as ten minutes.

Q. Okay.

A. Okay. Because you just put the slide on and --

Q. You know it when you see it?

A. Yeah.

Q. Are you presently working on any publications or projects that you intend to publish?

A. Yes.

Q. Can you tell me about those?

A. Yeah. Most -- most of them are in two groups of topics. One of them is in the work that

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I do for cervical cancer prevention in countries of low income. We have two manuscripts that are currently being prepared. One of them is a really revolutionary publication that will probably change the way we treat cervical cancer, resulting from clinical trials that we've done. So those are summaries of clinical trials in cervical cancer prevention.

The other group of publications is in the field of COVID. When COVID hit in 2020, I was the only pathologist who agreed to do COVID autopsies. And I took the opportunity to start a biorepository of tissues. And I have -- I did about 80 COVID autopsies. The first 20 I obtained frozen tissue from most major organs.

So now I am collaborating with basic scientists. The closest collaboration that I have is with Ivor Benjamin, I-V-O-R, and we are looking at some -- and I won't lie to you, I don't know the name of the molecules -- but some molecules that are profibrotic, meaning they tend to increase the fibrosis in organs, using my samples.

So we've already published two articles in there -- in that topic. And I am listed in two grant applications for that. So

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those are the two major areas.
Q. I'd love to spend some time picking your brain about all that, but I need to move on. I look forward to reading it.
So you're not presently working on any projects for publication involving ovarian cancer?
A. I am not.
Q. Some time ago you and I got into a lengthy discussion about cervical cancer. And I believe you opined that the only cause of cervical cancer is HPV; is that right?
A. By far the predominant cause of cervical cancer is HPV. There are rare, non-HPV-associated cervical cancers. Those are a very special type of cervical cancer called gastric adenocarcinomas. And they represent .1 percent of all cervical cancers.
Q. Gastric meaning derived from the digestion system?
A. No. It's a horrible name to have given them. They used to be called adenoma malignum. Then they changed the name to minimal deviation adenocarcinomas. And then the WHO, in all their wisdom, termed them gastric because some of the mucin that is produced by these cancers were

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similar to the mucin in gastric adenocarcinomas. But it confuses a lot of people, including pathologists.
Q. It's probably the same person that named endometrioid carcinoma, 'cause -- never mind.
Is it fair to say most of your clinical research at this time involves cervical cancer and the COVID work that you're doing?
A. Currently, yes.
Q. And has that been true for the past, what, four, five years?
A. You're correct, yes.
Q. In the past five years have you ever given any kind of presentation that included the topic of causes of ovarian cancer?
A. Yes. I teach medical students at the Medical College of Wisconsin, and there's an annual lecture on ovarian cancer in which I -- I outline the major associations to ovarian cancer.
Q. Is that a one-day lecture or multiple days or --
A. For ovarian cancer, it's a one-hour lecture.
Q. One hour.
A. Yeah.

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Q. Cover a lot of ground in one hour.
A. Yeah. They have been reducing the didactic content of medical school to the point that if you -- students relied only on what is being taught in lecture, they would be lay people, not doctors. But that is a personal opinion.
Q. I understand. Are those lectures ever transcribed? Are they in written form anywhere?
A. Yes. They are -- they are -- I created a PowerPoint presentation that is -- that is available to all the medical students through the MCW website. I don't know whether it's available to the public.
Q. Okay.
A. But, I mean, I could provide you with that PowerPoint. Not all of the information that I speak is in the slides, but --
Q. Right.
A. -- it's a -- it's a format for me to follow.
Q. Would it be fair to say that it's a cursory review of ovarian cancer given the fact you only have an hour to give it?
MR. HEGARTY: Objection to the form.
THE WITNESS: It is a -- it is an outline

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of ovarian cancers meant to guide the students' search into ovarian cancer.
BY MR. DEARING:
Q. And does the issue of -- is the issue of genital talc use incorporated in that presentation at all?
A. It is not.
Q. Are there any environmental factors that you include as risk factors for ovarian cancer?
A. Environmental, would that include medications or hormones?
Q. Well, often when I see a list of risk factors for ovarian cancer, it'll say environmental exposures, and it's a very general term. But I would open it as general as you want to make it.
A. I discuss hormones in relationship to ovarian cancer. Basically my opinion, or my teaching to the medical students, is that ovarian cancer has a very low, if any, association with hormone exposure. So other than that, I can't think of an environmental exposure to speak of.
Q. And is that across all histologies?
A. That is across all histologies, yes.
Q. So if you have very little patient interaction at MCW, is it fair to say that you

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never talk to patients about what caused their cancer?
A. I do not at MCW, no.
Q. Is it also true that determining the cause of a women's cancer is just not part of your normal care and treatment of the patient?
A. We're speaking strictly of ovarian?
Q. Yes.
A. No, because the laboratory performs studies, genetic studies. So for example, if a woman has a BRCA1 or BRCA2 mutation, I would opine that that mutation was probably the cause of her cancer. Sorry, let me just make sure I'm on mute.
Q. Okay. And if you need to take a call at any time, I --
A. No, that's fine.
Q. I don't mind taking a break.
So aside from genetic screening and studying germline mutations, do you ever consider any other causes of ovarian cancer or do you ever try to discern the cause of any of your patient's ovarian cancers?
MR. HEGARTY: Objection to form.
THE WITNESS: No. Ovarian cancer, like most solid tumors, the vast majority of them occur

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sporadically. So that is the most common cause of their cancer.
BY MR. DEARING:
Q. So let me just ask you. In your opinion, are there any known causes of ovarian cancer?
A. Yes. I think I discussed the genetic mutations in the cancer genes. Also probably the most common cause for ovarian cancer in most solid tumors is mismatched repair gene -- mismatched repair gene overwhelming -- or overwhelming gene -- mismatch repair genes from normal cell division.
Q. And the mismatch repair gene disruption is because of some kind of DNA damage typically, isn't it?
A. So every time a cell divides, the machinery of the cell has to copy the entire genome of that cell, which basically has all of the DNA that is within every one of our cells. Needless to say, that is an immense amount of copying, and there are mistakes made.
So there are four base pairs: adenine, guanine, cytosine, uracil in the case of RNA, and those are basically put down in a row by a molecule called the polymerase. And every once in

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a while, instead of putting an A, an adenine, it puts down a G line. That is a -- that is a mismatch.
But there's another molecule that follows called a mismatch repair molecule. And it detects the fact that there's a G instead of an A, and it knocks off the G and puts in an A. And all of this is occurring at vertiginous speed.
If there are too many mistakes, or even if there aren't too many mistakes, but the mismatch repair protein doesn't detect the error, that base pair will remain in the daughter cell. And that -- most of the time it doesn't matter, because that base pair will either create a nonviable cell, meaning it was in a gene that was so critical that the cell dies, or it is silent.
It doesn't matter because it occurred in a piece of DNA that wasn't transcribed, but occasionally it will result in a mutation that gives the cell an advantage. And those are called mutations that will progress towards immortalization of the cell.
And following immortalization, that cell will continue to have mistakes and turn into a cancer cell. So that is the most common cause of

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cancer.
And this is all really outlined beautifully in a publication by an Italian author called Tomasetti in a landmark publication. And I'm forgetting the title of that. But if you -- if you put that into -- into PubMed, it'll pop out pretty high on the list.
Q. As I understand it, isn't it true that the BRCA1 and BRCA2 mutations directly impact this mismatch repair gene? In other words, it disrupts the repair mechanism?
A. The way BRCA1 and BRCA2 mutations work is that they are antioncogenes. They slow down the rate of replication. By slowing down the rate of replication, you actually cause the mismatch repair proteins to be able to handle the work. But if you accelerate replication, the odds of getting a mutation are much, much higher. So that's the way most cancers are caused.
I'll give you an example in my field. Cervical cancer. Human papilloma virus has a protein that stops two antioncogenes. If you take a normal cervical cell, the rate replication is once every probably couple of weeks. If you introduce HPV, the rate of replication is every six

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hours. So all of a sudden you have increased the probabilities of getting a mutation many-fold.
Q. Okay. Is it true that the main driving cause of a repair disruption is some damage to the DNA of a cell?
A. I'm not sure I can answer that. I'll give you --
Q. Let me ask it a different way. I understand that constant replication may have its own inborn mismatch mistakes, I'll call them, and they just happen. But they also occur sometimes when they're -- when the DNA is damaged, which affects its ability to properly replicate or affects apoptosis, where it doesn't die on its own because it was improperly replicated. Is that a fair statement?
MR. HEGARTY: Objection to the form.
THE WITNESS: Yes, there are what are called mismatch repair gene mutations, which are mutations to the DNA. And the mutations occur in the genes that produce the proteins that repair mismatch based pairs. If a person has a mismatch repair gene mutation, they have a much higher risk of acquiring cancers. And, for example, in endometrial cancer and in colon cancer, mismatch

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repair gene mutations are, A, common, and a common cause of those cancers.
BY MR. DEARING:
Q. I've seen studies where reactive oxygen species can damage DNA in a way that may affect proper replication. Do you agree that that's a possibility as well?
MR. HEGARTY: Objection to the form.
THE WITNESS: That has been demonstrated in cell cultures. To the best of my knowledge, it has not been replicated in animals or humans. It is an interesting phenomenon because reactive oxygen species can alter DNA. The question is how do -- how do reactive oxygen species access the DNA.
BY MR. DEARING:
Q. Okay. Do you have an opinion about whether that is true biologically, that reactive oxygen species can damage DNA which can cause disruption in proper replication?
A. In cell culture I do believe that's true. I don't think it's been demonstrated in animals.
Q. Right. But one of the advantages of being an expert witness is you're allowed to offer opinions about things. Do you think that that's a

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reasonable process that could take place in humans?
MR. HEGARTY: Objection to form.
THE WITNESS: So one of the things that I try to do as a -- as you mentioned, as an expert, is not speculate, because speculation means that I'm just guessing.
BY MR. DEARING:
Q. Right.
A. So there are some topics that I just can't say yes or no to, and this is one of them.
Q. Well, is there any reason to think that because it's been demonstrated in a cell culture, it would not operate that way in a human body?
A. There are many reasons.
Q. Okay.
A. So in a cell culture you have a static situation, where you put the source of reactive oxygen species right on top of the cells and it remains there. In an animal, there's blood flow, there's oncotic pressures that -- that prevent things from going into cells or out of cells. There are so many factors that can't be replicated from in a static cell culture environment that would make that information a very valuable piece of information.

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Reactive oxygen species alters DNA in cell culture, but how can we design a study to show that it does so in animals. And that's -- that's where I don't think it's been done yet.
BY MR. DEARING:
Q. Right. It seems to me that that would be impossible to do.
A. Oh, I mean in -- we do horrible things to laboratory animals. I'm pretty sure that we could.
Q. I've also read -- and I've heard testimony about -- situations where molecules or -- I'm trying to think of the right word -- materials, can attach themselves to a DNA helix and cause damage. For example, I was cross-examining -- or deposing Dr. Chodash (phonetic). Do you know Dr. Chodash -- Dr. Chodash at Penn? He's a cell biologist.
A. I don't know him.
Q. Well, we had a long conversation in a deposition about tobacco and lung cancer. And he was trying to explain to me the current thinking of how tobacco smoke in the context of tobacco causes lung cancer. And he said there are -- there are carcinogenic molecules in tobacco smoke that actually attach to the DNA which cause considerable

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damage, which starts oncogenesis.
First of all, do you agree with that notion about tobacco, or is that beyond your field of study?
MR. HEGARTY: Objection to form.
THE WITNESS: Yeah, it's way beyond my field of study. I had a -- early on a colleague who -- who had a grant in tobacco smoke as related to carcinogenesis, and I sat in many of his laboratory meetings because I was cloning a gene for him. And he basically was studying tobacco glycoproteins as a toxin to cells.
So his point of view was that these tobacco glycoproteins cause injury to the cell itself. Injury to cells causes increased replication. Increased replication causes mismatch repair, which causes mutations, which causes cancer. That was his line. I am completely unaware -- and doesn't mean it's not true -- unaware of tobacco proteins or -- sticking to DNA.
BY MR. DEARING:
Q. Okay. With regard to ovarian cancer, do you believe that oncogenesis occurs when the cell is damaged somehow and then it causes this irregular replication and eventually transforms

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into a clinical?
A. So no.
Q. It's never as simple as my questions, but I'm trying to --
A. I will explain.
Q. Okay.
A. So the current hypothesis on ovarian carcinogenesis is that ovarian cancer starts in epithelium of the fallopian tube. Now, there are two sources of fallopian tube epithelium. One of them obviously in the fallopian tube. The second is inside of the ovary. Every time the ovary ovulates, it opens up. And the fallopian tube usually sits right on top of the ovary because it has to catch the egg as it comes out.
And as the ovary -- as the egg is expelled, there's a lot of hemorrhage. There's a lot of fibrin to stop the bleeding. And fibrin is like glue. And occasionally it'll pinch off a little piece of fallopian tube epithelium, and that piece of fallopian tube epithelium will be incorporated inside of the ovary. Those are called inclusions in the ovary.
Fallopian tube epithelium is -- has estrin receptors. And once inside of the ovary,

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that fallopian tube epithelium is exposed to pharmacologic levels of estrogen. So a woman will have 325 micrograms per deciliter of estrogen. The ovary will have 25,000 micrograms per deciliter because it's generating it there, and it leaches out into the circulation of the woman.
That incredibly high level of estrogen -- estrogen is a mitogen, meaning it causes the epithelium to replicate -- starts causing that little inclusion to -- the cells inside that inclusion to replicate. And as we discussed several times already in this conversation, increases replication, increases the chance of mismatched repairs, and the possibility that that cell will become immortalized and cancerous. So that's the way cancer can start inside the ovary.
Cancer in the fallopian tube -- even though there's a lot of people who claim that all of it starts in the fallopian tube -- is really, in my opinion, mostly in patients who have inherited mutations. So BRCA -- most of the cancers in BRCA in women start in the fallopian tube, and that's because they already have one gene down, one allele -- there's two alleles -- and to get both of

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them you only need one mutation.
So that's -- that's the reason it starts in the fallopian tube because there's so many cells in the fallopian tube.
Q. So I need to unpack that a little bit. So it seems inconsistent with regard to the inclusion phenomenon when you said a few minutes ago that most ovarian cancers are not influenced by hormones. So there seems to be a -- maybe I'm not understanding it right, but --
MR. HEGARTY: Object to form.
THE WITNESS: By external hormones.
BY MR. DEARING:
Q. By external hormones.
A. Correct.
Q. Okay.
A. And may I qualify that?
Q. Yeah.
A. So when you -- when you administer hormones to a woman, you're basically administering the levels of in the circulation. In the ovary, the levels are just astronomically high.
Q. Is it fair to say that serous carcinoma of the ovary is not thought to be influenced by hormones?

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A. Because 70 percent of all ovarian cancer is serous, the answer is yes, it's influenced by the hormones -- pharmacologic levels of hormones in the ovary.
Q. And that would just apply to the inclusion cancer, not so much those in the fallopian tube?
A. Well, if you look at the -- at the literature, most fallopian tube cancers begin in the fimbriae. And the fimbriae is sitting right on top of the ovary, which has all that amount of hormone. So it -- in my opinion, it does influence those in the fallopian tube as well.
Q. Since 75 or 80 percent of ovarian cancers are serous?
A. I said 70, but go ahead.
Q. Oh, I'm sorry. Okay, we'll use your numbers. Assuming 70 percent of ovarian cancers are serous, do you have an opinion as to what percentage of those actually start in the fallopian tube?
A. Yes, I have an opinion. If we're talking about non-BRCA mutants, probably 90 percent of them start in the ovary. Only ten percent at the most start in the fallopian tube. If we're talking

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about BRCA mutants, the proportion is almost exactly reversed. About 80 percent will start in the fallopian tube and 20 percent in the ovary.
Q. Is it fair to say that only about five percent of ovarian cancers -- I'm sorry -- only five percent of women diagnosed with ovarian cancer carry the BRCA1 and BRCA2 mutation?
A. You know, I haven't -- I haven't thought about the numbers lately, but I think it's higher than five percent.
Q. Well, I've read that only -- only 15 percent or so of all ovarian cancers are thought to be derived from genetic predisposition or -- or inherited mutations. Is that a fair number?
MR. HEGARTY: Objection to the form.
THE WITNESS: I'm going to check my report, because I comment on that in my report.
BY MR. DEARING:
Q. Okay. I didn't remember that. Is there one -- is there a report you're going to first?
A. It's in all of them, so...
Q. Okay. All right.
MR. HEGARTY: I can show him where I think he wants to look at.
MR. DEARING: Sure. Of course.

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MR. HEGARTY: Turn the next page.
MR. DEARING: Which report are you looking at?
THE WITNESS: This is the Converse, but it's present in all of them.
BY MR. DEARING:
Q. Okay.
A. It's the first few paragraphs.
Q. First few paragraphs of what section? Of the whole thing?
A. It would be in the --
MR. HEGARTY: Above the brief clinical history part.
MR. DEARING: Okay.
THE WITNESS: So almost 25 percent of women diagnosed with ovarian cancer carry germline mutations in cancer susceptibility genes, including BRCA1 and BRCA2.
BY MR. DEARING:
Q. Okay.
A. BRCA1 and BRCA2 account for approximately 15 percent of germline mutations, with the other cancer-associating genes -- and then I give a list of -- a long list accounting for the rest.
Q. Right. So 15 percent of 25 percent is

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what percent to the overall population of women with cancer?
A. No, I think 15 percent of all women with ovarian cancer carry germline mutations in BRCA1 and BRCA2.
Q. Okay. This says 25 percent of women diagnosed with ovarian cancer carry germline mutations. And then it says approximately 15 percent of germline mutations -- I'm sorry -- BRCA1 and BRCA2 account for approximately 15 percent of germline mutations. So aren't you talking about 15 percent of the 25 percent?
A. The way I worded it, that would be it. But I'm pretty sure it's 15 percent of all germline mutations.
Q. Okay. That's where I got my five percent. It's actually 3.5, 3.7 percent. Okay.
So I understand that all ovarian cancers are caused by some kind of genetic defect, whether it's a mismatch, replication, or something. And as I understand your testimony, in your opinion, the only known cause of that mismatch carcinogenesis is an inherited mutation; right?
MR. HEGARTY: Objection to the form.
BY MR. DEARING:

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Q. Other than the fact that it can happen on its own sporadically, the only known cause of the damage is an inherited gene mutation?
MR. HEGARTY: Object to the form.
THE WITNESS: The only association strong enough to -- to claim that it's causal is a -- a mutation in one of those genes, yes.
BY MR. DEARING:
Q. And when you're discerning the cause in an association that's strong enough, what would be a relative risk range where you think, okay, now that's a causal association?
MR. HEGARTY: Objection to the form.
THE WITNESS: I -- I've tried to make that assessment. I don't think there is a line anywhere. I think that associations that are above two or three are very strong associations that are worth investigating. But again, there is no line. There are very, very strong associations that turn out to be nothing.
BY MR. DEARING:
Q. Right.
A. Like --
Q. You talked about that in your report.
A. Correct. And then there are associations

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like the association with BRCA. You were talking its either five or 15 percent. It's really low, right? It's very, very low. But somebody chased it, and it was true. So it can be -- you know, a 15 percent is -- is a relative risk of 1.15.
So -- so -- and that's the problem with biology. It's not physics where you can have a number. It's -- it's biology.
Q. And I appreciate that. That's why I asked you sort of a range.
A. Yeah.
Q. But you think a two- to three-fold increased risk is a strong association?
A. I believe that it -- certainly a three increase in relative risk is a strong association.
Q. How would you characterize a doubling of a risk, a twofold increased risk?
A. A doubling of the risk?
Q. Right. So you're talking about three, but I'm going down to two. How would you characterize two as far as a strength of association?
A. And again, I'm not a statistician, so this is an opinion. I would say it's indeterminate.

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Q. Even at two percent is indeterminate?
MR. HEGARTY: Objection to form.
THE WITNESS: Yeah. It's a weak association. Indeterminate meaning I wouldn't -- if I was in Vegas, I wouldn't bet on it.
BY MR. DEARING:
Q. So is there a degree of certainty that you would require before you would acknowledge or agree that something is likely to be a cause of a particular cancer?
A. So it is my opinion that associations are extremely important to know about so that you can investigate it. In and by itself, an association is not causal. Obviously if you ever got an association where a hundred percent of people got something, whereas if they didn't have it, zero percent would get it, then I would say yeah, that's causal. But other than that, you have to prove it. And to prove it, you have to show a mechanism. And that's the way science should work.
Q. Right. I guess what we're talking about here is assessment of risk. And so if you're looking at a relative risk, let's say in the 1.5 to two range, would you think that that risk warrants further investigation?

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MR. HEGARTY: Objection to form.
THE WITNESS: Yes. I think any risk is -- is -- warrants further investigation.
BY MR. DEARING:
Q. And if that risk proved to be, after further investigation, truly between a 1.5 and two relative risk, if that risk was associated with a commercial product, do you think that that would warrant a warning to the user of that product?
MR. HEGARTY: Objection to the form. Calls for speculation.
THE WITNESS: So when you say further investigation shows that there's still a 1.5 risk, that doesn't make sense. Because further investigation needs to show a cause, either a biologic or a physical cause. Exposure to radiation gives you certain types of cancers. There's an association with that. Then you go to the laboratory or to the clinic -- no, laboratory -- and you say why would it cause cancer. And then you see that radiation causes direct damage to DNA. Now you have the association, hey, people exposed to radiation get cancer. Go into the laboratory and you say hey, when you look at the cells that are exposed to

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radiation, they have DNA damage. Now you've linked the risk to a cause. And that's what you need to say that something is causal.
BY MR. DEARING:
Q. Well, isn't it true that scientists went years, maybe decades, looking at tobacco and lung cancer before they realized how it was causing lung cancer, but the association was clear decades before the how was ever proven; right?
MR. HEGARTY: Objection to the form.
THE WITNESS: I don't think -- and I don't know enough history on tobacco to say that you're right or wrong, but the toxins in tobacco smoke were shown very early in the process, and whether they were hiding it or whether they were not motivated to pursue it -- after all, four out of every five doctors smoked Clarks.
BY MR. DEARING:
Q. Have you ever published or lectured on any topics associated with talcum powder?
A. I have not.
Q. You mentioned briefly some epidemiology studies in your report. But in my opinion, there's not a lot of depth to the explanation. Are you intending to offer epidemiology opinions at trial?

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MR. HEGARTY: Objection to the form.
THE WITNESS: I'm -- I'm only going to opine that prospective studies carry more credibility than retrospective studies, and that -- and that the prospective studies that have been done regarding talcum ovarian cancer failed to show an association.
BY MR. DEARING:
Q. Okay. Have you taken courses in epidemiology?
A. I took one in medical school.
Q. Right.
A. That's about it.
Q. Okay. What is the source of your opinion that prospective studies are more reliable than retrospective studies?
A. So it's not me saying that. When you look at levels of -- it was in the front of my mind, and -- levels of evidence. There's five levels of evidence. I believe the most robust is a double blind prospective randomized study. That's the panacea, right? Nobody knows anything until the very end, and then you find out whether something had to do with an effect.
After that, the fourth level is

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prospective studies that are not blinded or -- but they are randomized. And then after that is prospective studies that are not randomized. And then after that is retrospective studies, and then after that is opinion, or something along those lines.
Q. Where would you rate meta-analyses and systematic reviews?
A. Because I'm not an epidemiologist, I don't have the knowledge base to place it. Because meta-analyses are actually a relatively new thing. And some people think that they are very high in the level of evidence, and some people basically think well, garbage in, garbage out, right?
If you have 100 really bad studies and you put them all together, does that give you a really good study? So my opinion is guarded regarding meta-analyses. Obviously, there are -- there are some meta-analyses that have proven true by doing a randomized double blind study and the same result occurs.
And a very good friend of mine, Malcolm Pike, gave an entire lecture regarding a bunch of retrospective meta-analyses that predicted the outcome of a prospective randomized study. But

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others don't. So it just depends. And I -- I think that generalizing meta-analyses as better or worse is not a very good practice.
Q. The last question asked what was the source of your opinions about this. You said these aren't my opinions, and you told us about the levels. But where are you getting this information from?
A. These are published. And I -- I can't quote you the article, but these are well-respected epidemiologists who got together and formulated these five levels of evidence. And -- and most people follow them.
And if you look at guidelines, for example -- so I worked at one point with the American Society of Colposcopy and Cervical Pathology, and I was on the high-grade dysplasia committee, and we published guidelines. If a woman has a PAP smear that's like this, what should you do. And then we would say you should biopsy through colposcopy, and then we would state level of evidence. Level of evidence is -- level for evidence or whatever. Because there are prospective trials showing that cytology predicts pre-cancer.

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So those are -- most of the guidelines will have levels of evidence. So if you go to any of the large societies that publish guidelines, they will use those five categories.

Q. Well, would you agree that epidemiology, like most areas of science, is an evolving science? In other words, what people thought 30 years ago may not be how they think about something now?

MR. HEGARTY: Objection to the form.

THE WITNESS: I -- I agree with your comment. All science evolves as knowledge becomes available. And if it doesn't, then you're just being dumb about it.

BY MR. DEARING:

Q. I saw in your CV that you actually participated in a case control study. And before I ask you -- on ovarian cancer. And before I ask you about that, would you agree with me that case control studies, despite where they may fall on this hierarchal of evidence, can provide very useful, helpful information with regard to associations?

A. There's no --

MR. HEGARTY: Objection to the form.

THE WITNESS: There's no question that

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that's true. They provide very useful information. And in fact, case control studies are probably the beginning of most fact-finding journeys in medicine.

BY MR. DEARING:

Q. Is it true also that case control studies can often formulate or postulate an association faster than a cohort study because you don't have to wait for the end disease to occur years down the road?

MR. HEGARTY: Objection to the form.

THE WITNESS: That is correct. That's one of the advantage of case cohort studies.

BY MR. DEARING:

Q. Back to what started this whole thing. Other than just a statement about the hierarchal reliability of case control versus cohort studies, do you intend to discuss any of the specific detailed epidemiology studies that you mention in your report at trial?

MR. HEGARTY: Objection to form.

THE WITNESS: I do not intend to do so, no.

BY MR. DEARING:

Q. 'Cause both sides will be calling

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epidemiologists to do that?

A. Hopefully.

Q. It won't be me.

I see you brought materials with you today. You have several binders. Were those provided to you by the lawyers?

A. Yes, they were provided to me by the attorneys for the defense. The materials that refer to my opinions were authored by me. The materials that I referred to were authored by your experts also.

Q. Okay.

A. But they're in there.

Q. Oh, the plaintiff expert reports are in the binders?

A. Yeah. Yes.

Q. I mentioned this before, but we were sent some very large data files two days ago that I assume are mostly photomicrographs. But because of the volume of the data, we were unable to download them and get them opened in any useable way. Did you bring photomicrographs with you in addition to the ones that are already incorporated into your reports?

A. I did not.

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Q. Okay.

A. The -- the files that you're referring to are accessible. And I can almost certainly download one, maybe. This is an air book computer, and they're fairly limited storage space. The files are usually one-and-a-half gigabytes in size. But the -- basically those files -- each file represent one glass slide of the surgical pathology case of that patient.

So in the case of Ms. Balderrama, which I actually -- I don't have yet, it would be about a hundred of them, a hundred slides.

Q. Okay. What do you mean you don't have yet?

A. They're currently being -- I'm maybe not remembering right, but I have one case that's currently being digitized.

Q. Okay.

A. And it's not in my computer file yet. If it becomes important for you to see those, we can walk to my office, which is about a five-minute walk, and I can show you all of them in my desktop.

MR. DEARING: Well, more importantly than me being able to see them is us being able to attach relevant photomicrographs as exhibits to

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this deposition. But what I could do is I'd like to just reserve the ability to examine the doctor at some future date when we actually have the photomicrographs, if it's necessary, to point out relevant features that he thinks bear on our clients' conditions.

MR. HEGARTY: We're agreeable to cross that bridge if we ever come to it --

MR. DEARING: Okay.

MR. HEGARTY: -- through discussions between the parties.

MR. DEARING: Okay. I'm confident we can work it out, so...

BY MR. DEARING:

Q. Do you know how Johnson & Johnson ever learned your name as far as before they approached you about investigating this talc ovarian cancer issue?

MR. HEGARTY: Objection to form. Also, I know you're not meaning intentionally -- or misrepresenting. Johnson & Johnson did not approach --

MR. DEARING: Let me re-ask the question. Thank you.

BY MR. DEARING:

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Q. Do you know how the lawyers for Johnson & Johnson got your name to approach you about possibly being an expert witness in this litigation?

MR. HEGARTY: I'll object and instruct you not to respond to the extent that would require you to disclose information that the attorneys provided to you as part of the -- of our communications. But if you can answer apart from anything you were told or you learned about from discussions with counsel, then you can answer.

THE WITNESS: I am not completely certain about how they learned from me, other than at the time I was working very closely with Bob Kerman, and I know Bob has been an expert for the defense. And my -- my best guess is that Bob gave them my name as a possible expert.

BY MR. DEARING:

Q. Okay. Have you ever been a paid speaker for Johnson & Johnson or any Johnson & Johnson company?

A. I have not.

Q. Have you ever received any contributions or funding or research grants from Johnson & Johnson or any of their companies?

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A. I have not.

Q. As you sit here today, can you tell me as best that you can recall what other corporations you have testified on behalf of?

MR. HEGARTY: And that would be limited, as Mr. Dearing's question said, to those where you've actually testified versus those that you might have consulted with but were never disclosed as an expert and never testified for.

THE WITNESS: So I -- other than Johnson & Johnson, Phillip Morris, and maybe another of the tobacco companies.

BY MR. DEARING:

Q. That's all? I used to have a longer list, but I didn't bring it.

A. Yeah, I think as far as product liability that's it. I mean, Johnson & Johnson and Phillip and the tobacco companies.

Q. And you were first retained by the lawyers for Johnson & Johnson about ten years ago. Does that sound right?

A. Yeah, I think the first case was 2012. So a little bit more than ten years ago.

Q. Well, if the first case was in 2012, were you retained before 2012?

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A. Probably, but I -- no exact memory of it. The only way I figured out 2012 is we went back in the records and saw that it was 2012.

Q. It feels like a lifetime to me --

A. Yeah.

Q. -- it's been going on.

A. I mean, I was young back then.

Q. Same. In those twelve years or so has Johnson & Johnson's lawyers ever provided you with any internal company documents to review?

A. They have not. The way that I have seen internal company documents is when -- when you show them to me. Or not you, but --

Q. On cross-examination?

A. -- the attorney -- the attorneys show them to me, yes.

Q. So the only corporate documents you've ever seen from Johnson -- strike that.

So the only Johnson & Johnson corporate documents you've ever seen are those that were shown to you as part of cross-examination in a trial?

A. That is correct, or deposition.

Q. There are reference lists attached to all of your reports. Did you prepare that reference --

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those reference lists?
A. Yes.
Q. And do you rely on all of those references in forming your opinions?
A. I used those references to form my opinions. I'm not -- I guess using them to form my opinion and relying on them could be synonyms. But I think the legal term "rely" brings some luggage with it.
Q. Okay. Not trying to sneak luggage in on you.
A. Okay.
Q. Have you read everything that's on your reference list?
A. Yes. At one point or another I've read every single one of those articles, which made me a lot of money.
Q. Right. One more question about the epidemiology. You list several epidemiology studies and articles in your reference list. But would you agree with me that epidemiology studies don't really inform your pathology opinions in these cases?
A. You're --
MR. HEGARTY: Objection to the form.

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THE WITNESS: So they inform it a little bit.
BY MR. DEARING:
Q. Okay.
A. In other words, epidemiologic studies say there's an association between talc and ovarian cancer. So I go to the microscope and I say well, is there any evidence that there's talc present in the ovary while the ovary was vital, meaning in the person's body. So in that way it does influence me, because -- I look at ovaries very, very differently since we began this litigation process.
Q. Okay. I believe you've testified years ago, maybe more recently, that you actually learned about the effects of talc in the human body in medical school; is that right?
MR. HEGARTY: Objection to the form.
THE WITNESS: It is likely so, yes.
BY MR. DEARING:
Q. Did you have any opinions about talcum powder and ovarian cancer before the lawyers for Johnson & Johnson approached you about serving as an expert in this litigation?
A. To tell you the truth, it never crossed my mind, because I know what talc does inside the

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body. And I saw it a couple of times in -- in ovaries very early on in my training. Back then there was still women who had been -- undergone surgery, and surgeons had powdered gloves. So I saw the sequela of talc in the female pelvis in probably a handful of cases.
So I know what it -- what it does. So it never crossed my mind that it would be a cause of ovarian cancer. And then I -- I started reading more and more about it and -- and -- and formed opinions about it.
Q. Is it your opinion or even common knowledge that talc exposure in the pelvis will -- will initiate or cause an inflammatory reaction?
MR. HEGARTY: Objection to the form.
THE WITNESS: A very specific inflammatory reaction, absolutely.
BY MR. DEARING:
Q. And what specific reaction are you referring to?
A. It will form a foreign body reaction.
Q. And those foreign body reactions would include macrophage activity, granulomas -- granulomatis activity, and even multi-nucleated

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giant cell activity?
MR. HEGARTY: Object to the form.
THE WITNESS: So it will cause what in -- in pathology and medicine is called a granulomatous reaction. Granulomatous -- granulomas are formed by three types of cells, two of which are very closely related. One of them is a macrophage. The other one is the foreign body giant cell. I'm sorry. One of them is the microphage. The other one is the multinucleated giant cell. And the third is the lymphocyte, okay?
Now, there are two types of granulomas. There are immune granulomas, which are generated by -- most of them -- infectious organism such as tuberculosis or fungi, and then there's the foreign body granulomas which are formed by foreign bodies.
BY MR. DEARING:
Q. Is it true to say that granulomas are essentially a conglomeration of macrophages all coming together?
MR. HEGARTY: Objection to the form.
THE WITNESS: It is -- it is a -- your description very much describes what a granuloma is.

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BY MR. DEARING:
Q. When you were observing those effects of talc in the female pelvis, did you ever actually look at the talc particles that were left behind?
A. Yes.
Q. And would you agree with me that those talc particles -- the size of those talc particles would dictate the type of response? In other words, if the particle left behind was five microns in diameter, that would most likely attract a macrophage. If it was a hundred microns in diameter, that might attract something larger. Would you agree?
MR. HEGARTY: Objection to the form.
THE WITNESS: As a general rule, that is correct. But I have seen foreign body granuloma with foreign body giant cells in particles as small as three microns. And I have photographs of that. So -- so as a general rule, the smaller particles are phagocytized by macrophages. The larger particles cannot be phagocytized because they're too large for the macrophage to engulf the particle, so then that causes a granuloma.
BY MR. DEARING:
Q. Okay. Is it also true that sometimes

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macrophages die during the phagocytosis process for whatever reason, either they can't adequately sequester and phagocytize the particle or the particles's just too big?
MR. HEGARTY: Objection to form.
THE WITNESS: You are correct, there -- there is a phag -- a macrophage can die in the process of phagocytosis.
BY MR. DEARING:
Q. And when that occurs, more macrophages typically come to take its place; is that right?
A. Yes. A naked particle cannot exist without a foreign body reaction to it.
Q. But wouldn't you agree that there may be a transition period where a macrophage dies, another macrophage has not taken it up yet, and the particle is just sitting there by itself?
MR. HEGARTY: Objection to the form.
THE WITNESS: Yeah, I -- I -- I'm not sure anybody can answer that question because usually it's not just one macrophage that shows up. When there's a foreign body, probably thousands of macrophages are -- are around. Will there be a point of a macrophage dies where that particle is exposed to tissue itself? Likely. Likely. But

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not for very long.
BY MR. DEARING:
Q. Do you agree that once tissue's removed from the body, all inflammatory processes, all macrophages, everything just stops?
A. You are --
Q. In other words, the cells die and nothing else happens?
A. You are correct. Within probably seconds of the organ being devitalized, those processes will stop.
Q. Is it also true that macrophages may be attracted to dead cancer cells?
A. Absolutely.
Q. And it's not uncommon to actually see a macrophage sequester a dead cancer cell; right?
A. The macrophages engulf the rest of the cells. Once the cell dies, most of the time it fragments and then the macrophage will eat the fragments of the -- of the dead cell.
Q. When you are looking at surgical slides from an ovarian cancer patient under routine microscopy, do you typically observe macrophages, or is that something you're just not looking for?
A. Oh, no, we look for it very carefully for

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a variety of reasons. Many cases of ovarian cancer today, as opposed to 30 years ago, have what -- have undergone what's called neoadjuvant chemotherapy, where the woman receives chemo before the surgery. And actually one of the parameters that is non-optional in our synoptic forms is the effect of chemotherapy on the tumor. And we measure that predominantly by the presence of macrophages.
So there -- in the case a woman will have received chemotherapy and we'll see massive amounts of macrophages and only a little bit of tumor then we -- we categorize that as an excellent response. If there are some macrophages but a lot of tumor left, we'll say moderate response. And if we can't see any evidence of macrophages, we'll say minimal response.
I'll -- I'll categorize it by saying that it's -- that it's not a perfect attempt to categorize the effect of chemotherapy on the tumor because there are cases where radiologically the woman had large ascites, an enormous amount of carcino -- carcinomatosis in the omentum and peritoneum, and at the time of surgery, there's very little tumor. And we'll look at it under the

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microscope and there won't be a single macrophage. And I can't explain that, but it happens. So -- and, again, biology, it's not physics.

Q. In cases where women have not had neoadjuvant chemotherapy are you also looking for macrophages in typical cervical slides?

A. Yes. So tumors will have a cell turnover for a variety of reasons. Some people use the term they outgrow their blood supply and large areas of that tumor become necrotic. So we -- we will frequently find macrophages.

The other thing that -- that a lot of people don't know is that just because a woman has cancer doesn't mean she may not have other diseases. And in -- in my practice I have discovered at least five women who have had -- who had tuberculosis in addition to their ovarian cancer. And I found that out because there were granulomas, and I stained them, and there were microbacteria in them, so...

And that can be really important because -- particularly if she hasn't received neoadjuvant chemotherapy and she has tuberculosis, and then you give her chemotherapy and you make her immune deficient, she can die of the tuberculosis.

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So -- so it's really important for us to look at.

Q. I appreciate that. And that sort of seems like cutting-edge pathology. But based on your experience as a pathologist -- and you've worked other places. I know you were at USC for a long time -- isn't it true that most surgical pathologists, when they're looking, spending a few minutes to diagnose a patient, that they're not looking for macrophages in those slides?

MR. HEGARTY: Objection to form.

THE WITNESS: So it depends on the level of macrophages, okay? Most even community pathologists, if they find increased numbers of macrophages, they will not only detect it, but likely try to find an explanation for it. And there are things called xanthomonas reactions that are associated with genetic conditions that -- that are important to detect, so...

And again, another example, there are macrophages in virtually every tissue that we examine as pathologists. And it's normal to expect a macrophage in a tissue section. If it's the level -- if it's at the level of what is normally found in tissue, most pathologists will not focus on it.

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BY MR. DEARING:

Q. Is it also true that most pathologists, surgical pathologists, will not polarize the slides when they're looking at the surgical slides?

MR. HEGARTY: Objection to form.

THE WITNESS: Not unless there's a reason to. And the reason would be granuloma.

MR. DEARING: Okay. We've been going about an hour and a half. Does anybody need a break?

MR. HEGARTY: Yeah, I could use a short break.

MR. DEARING: Okay.

(Break taken.)

BY MR. DEARING:

Q. We were talking about the inflammatory reactions on the pelvis left by -- or caused by the talc left behind from abdominal surgeries. And my question is, you said you observed granulomas and granulomatous reactions. Do you have any opinion about whether a chronic inflammation like that in the pelvis can cause metaplasia or -- can initiate a cancer process?

MR. HEGARTY: Objection to the form.

THE WITNESS: I do have an opinion.

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BY MR. DEARING:

Q. What is that opinion?

A. Granulomatous inflammation has not been associated with carcinoma.

Q. What negative health effects can a chronic inflammatory reaction cause in the pelvis?

MR. HEGARTY: Objection to form.

BY MR. DEARING:

Q. If any?

A. Yes. It can cause and it does cause adhesions, meaning one organ sticks to another. Adhesions are a source of pelvic pain in women. It is also a cause of infertility. So pain and infertility are the two sequela of talc-induced chronic inflammation.

Q. Do you know about how many hours you've spent researching before you conclude that talc can cause cancer? You know what, let me ask a pre-cursor question to that. I'm sorry.

Is it your opinion that talc exposure cannot cause any kind of cancer anywhere in the body?

A. That is my opinion in the -- in the parts of the body that I'm aware talc has been used.

Q. Okay. And do you know how much time you

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spent researching to come to that conclusion?
A. Many, many, many hours.
Q. Did you research that issue prior to being retained by the lawyers for Johnson & Johnson?
A. No. Not to any depth, no.
Q. So then after you were retained by the lawyers for Johnson & Johnson, is it fair to say that's when you first started investigating whether talc can cause cancer in the parts of the body that you're familiar with?
MR. HEGARTY: Objection, form.
THE WITNESS: In an organized fashion, yes.
BY MR. DEARING:
Q. And do you know how many hours of research you conducted before you reached a final conclusion that talc can't cause cancer?
A. I mean, if you look at my reliance list, it -- it -- I've read all of those articles to make sure that I was not opining without basis. So probably, you know, a hundred hours.
Q. Did you have any preconceived notions about the idea when Johnson & Johnson lawyers first approached you, the idea being whether talc can

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initiate or cause ovarian cancers?
MR. HEGARTY: Objection to the form.
THE WITNESS: As I mentioned earlier, it never occurred to me.
BY MR. DEARING:
Q. Are the administrators of the Medical College of Wisconsin aware of the fact that you're offering opinion testimony in this ongoing litigation?
A. They're aware that I do medicolegal consulting.
Q. Okay. Do you ever have to run your opinions by anyone at the Medical College of Wisconsin before you go under oath offering them somewhere?
A. I do not.
Q. Is there a process at MCW whereby you advise the administration that you're doing legal work for a company?
A. Yes. There is an annual conflict of interest disclosure that I fill out in which I put all of the -- not all of them, but the law firms that I work with and the issues that they -- that are involved.
Q. Okay. Have you discussed your

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talc-related opinions with any of your colleagues here?
A. No, not with any -- I may have mentioned it in casual conversation, but not as a topic of interest -- sorry, not as a topic of medical discussion. I may have said, yeah, I'm -- I'm going to be -- I'm examining this case that relates to talc and ovarian cancer.
Q. Okay. But not substantively about your opinions?
A. Correct.
Q. Have you ever showed anyone here your expert report?
A. Anyone at MCW?
Q. Yes.
A. No.
Q. What about when you were at USC, did you ever show any of your colleagues there your expert reports?
A. No.
Q. Has the topic of genital talc use in ovarian cancer ever come up in your rounds or tumor boards or group meetings?
A. It has not.
Q. Have you ever published on anything

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related to the causes or risk factors of ovarian cancer?
A. Yes.
Q. Do you remember what that publication was? Was it more than one?
A. Yes. So I worked with a colleague whose name was Louis DuBeau, B-E-A-U. And we looked at several genes regarding ovarian cancer and their role in ovarian carcinogenesis.
Q. Do you know when that publication was?
A. It was in -- I don't remember. I can --
Q. Is it on your -- is it on your CV?
A. It's on my CV, yes.
Q. Okay. Might be easier for you to find it than me. If you can just direct me to it.
A. Sure. So reference number 21, the potential role of inactivated X chromosome in ovarian epithelial tumor development.
Q. Okay. I don't see Dr. DuBeau's name.
A. He's --
Q. Oh, yes, I do. Yes, I do.
A. He was the senior author.
Q. Is that the only publication?
A. No, the one beneath it as well. And then 24, alterations in DNA methylation are early but

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not initial events in ovarian tumorigenesis. Then 27, this is with Michael Press, WAF1/CIP1, gene polymorphisms, an expression in carcinomas of the breasts, ovary, and endometrium.

So I became involved in all of these publications because of my expertise in diagnostics. So as you probably heard, properly classifying tumors is pretty important when you're trying to determine if something causes it or not.

Q. Right. Was that your role for the most part in these publications is diagnosing or classifying the tumors?

A. Well, at the time I also had a molecular biology laboratory, so I may have done some of the tests in the lab. 34 is another example.

MR. HEGARTY: Do you want him to keep going, David?

BY MR. DEARING:

Q. I mean, I don't want to spend a lot of time on it, but if any jump out at you, I'd like to know about it, particularly with regard to risk factors in ovarian cancer.

A. 35, imbalanced expression of inhibin and activin subunits in primary epithelial ovarian cancer.

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Q. Let me ask you this. What about in the past ten years, have you published anything on ovarian cancer?

A. Not to my knowledge, no.

Q. Do you have any opinions as to what may cause primary peritoneal cancer, or would it be the same causes we've already discussed for ovarian cancer?

A. It would be the same causes, in my opinion.

Q. Is it your opinion that most primary peritoneal cancers also derive from the fallopian tube?

A. From fallopian tube epithelium, yes. Well, there's -- there's -- the serous ones will be from fallopian tube epithelium. The endometrial ones will be from endometriosis.

Q. You've opined that talc cannot cause any type of ovarian cancer. Is that opinion based on your opinion that talc can't reach the ovaries, or that talc doesn't affect the tissue in a way that might cause cancer when it gets to the ovaries?

MR. HEGARTY: Objection to form.

THE WITNESS: Both.

BY MR. DEARING:

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Q. Both. Okay. So have you read studies supporting the idea that chronic inflammation can ultimately lead to cancer?

A. Yes, I have read many studies that indicate that.

Q. And do you agree that chronic inflammation does cause some types of cancer?

A. Yes.

Q. I think you mentioned a few in your report.

A. Correct. And again, chronic inflammation is a very good term, but it is frequently misused because there are many types of chronic inflammation. There's chronic inflammation that causes cell death in tissues, and there's chronic inflammation that does very little in tissue, or practically nothing. So those are two very different types of chronic inflammation.

Q. Which type of chronic inflammation would include the reactive oxygen species being released in an amount that would damage DNA and cause improper replication?

A. Again --

MR. HEGARTY: Objection, form.

THE WITNESS: Again, reactive oxygen

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species damaging DNA have been shown only in cell culture. So there hasn't been shown to -- have not been proven in live organisms. The type of inflammation that causes cancer is long-term destructive inflammation.

BY MR. DEARING:

Q. Long-term destructive, that's what chronic means; right?

A. No, chronic means that it's not acute. It means that it's been there for a long time.

Q. Okay. Is chronic, as you're using it, does that mean that it's an ongoing process?

A. That is correct.

Q. And I think we're using it the same way.

A. I don't think so.

Q. We'll see. Well, you would agree with me, wouldn't you, that there are many credentialed scientists who do believe that chronic inflammation can cause cell damage that results in carcinogenesis?

MR. HEGARTY: Objection to form.

THE WITNESS: All of us believe that.

BY MR. DEARING:

Q. Do you believe that there are reputable scientists that believe that that occurs in the

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female reproductive tract and, in particular, the ovaries and fallopian tube?
MR. HEGARTY: Objection to form.
THE WITNESS: There are some scientists, physicians who believe that there are some types of inflammatory processes that increase the risk of cancer such as pelvic inflammatory disease or upper genital tract infection, has a slight association with increased ovarian cancer.
BY MR. DEARING:
Q. Would you agree with me that some studies do demonstrate a statistically significant increase of ovarian cancer of women who use talc in the genital area?
MR. HEGARTY: Objection to the form.
THE WITNESS: There are cohort studies that arrive at that conclusion.
BY MR. DEARING:
Q. Do you agree that if talc were to reach the fallopian tube or ovaries, that you would expect some type of inflammatory reaction by the ovary or fallopian tube tissue?
A. By necessity, yes.
Q. And would you agree that if the inflammatory response could not adequately

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remediate the exposure, that the inflammatory response could become chronic, in other words, long-term and ongoing?
MR. HEGARTY: Objection to form.
THE WITNESS: The foreign body reaction, which is the form of chronic inflammation that you expect with talc, would be ongoing for a very long time.
BY MR. DEARING:
Q. And scientists and physicians refer to that ongoing response, or that ongoing process, as a chronic inflammation; right?
MR. HEGARTY: Objection to the form.
THE WITNESS: A chronic foreign body inflammation.
BY MR. DEARING:
Q. Just making sure I'm using it correctly. Words matter, so I want to get them right.
A. Sure.
Q. So is it your opinion that Johnson's talc-based baby powder is completely safe for women to use in the perineum?
A. Yes.
Q. And is your opinion about Johnson's baby powder without regard to anything that may be in

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the talcum powder?
MR. HEGARTY: Objection to form.
THE WITNESS: Yes.
BY MR. DEARING:
Q. Do you have any opinions about whether Johnson's baby powder has ever contained asbestos?
A. I have read reports that it found asbestos in talcum powder.
Q. Do you have any opinions yourself as to whether the product has contained asbestos in the past? And I'm only saying the past, because it's not on the market now. So at any time.
A. Because of those reports that have been done, yes, they -- it probably did contain trace amounts of asbestos.
Q. Have you ever seen any testing results from those tests testing the product for asbestos?
A. I have not witnessed the -- the testing results personally, no.
Q. So when you say you have read reports, are you talking about reports that were just in the general --
A. In summaries --
Q. -- media?
A. In summaries like IARC.

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Q. Okay. Did you ever -- I'm sorry.
You testified a while ago that you've not seen any Johnson & Johnson documents other than the ones that have been shown to you during cross-examination, either in a deposition or trial. But did you ever ask to see any documents from Johnson & Johnson?
A. No, I did not.
Q. So if it was established that Johnson's baby powder did in fact have asbestos in it, is it still your opinion that it's safe for women to use in the perineum?
MR. HEGARTY: Objection to form.
THE WITNESS: Yes.
BY MR. DEARING:
Q. What if it was established that the talcum powder had carcinogenic heavy metals like chromium or nickel or arsenic or lead or all of them, would that affect your opinion about whether talcum powder is safe to use in the genital area?
MR. HEGARTY: Objection to form.
THE WITNESS: No. And may I please explain it?
BY MR. DEARING:
Q. Of course.

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A. There is a minimum level of exposure that must be exceeded before something is unsafe. So cosmic radiation, which we are being blasted with right now, is highly carcinogenic. Actually flight attendants have a four-fold increase in breast cancer because they're -- they don't have the atmosphere to protect from many hours each day.

You and I are being affected by it but it doesn't increase our risk of cancer. Similarly, if they take your lungs or part of your bladder and they grind it up and look for asbestos, they will find it. There is a base exposure that we are all constantly exposed to that makes us inhale asbestos.

There's -- there's probably -- we can detect lead in your body if we looked hard enough. But it's not going to affect you because it's in such small amounts. Even plutonium, if in small enough amount, will not adversely affect you. So those are the reasons why I don't believe that any of those things, if they find minimal trace amounts of talcum powder, would be adverse to your health.

Q. Well, would you agree with me that regulatory agencies have stated that there is no safe level of exposure to asbestos?

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MR. HEGARTY: Objection to form.

THE WITNESS: Well, if a regulatory agency said that, then they don't look at the science. Because we all have asbestos in our bodies. And as a matter of fact, they -- when you do asbestos studies, you compare it to the -- to the base background level of asbestos to see if it's elevated.

BY MR. DEARING:

Q. So do you disagree with the statement that there is no safe level of exposure?

A. Yes, I disagree with that statement.

Q. Is there some level of asbestos and talcum powder that would change your opinion about the safety of powder applied to the genital area for women?

MR. HEGARTY: Objection to form.

BY MR. DEARING:

Q. For example, if one percent of the contents of a bottle of Johnson's baby powder was chrysotile or tremolite asbestos, would your opinion still be that talcum powder was safe for women to use in the perineum?

MR. HEGARTY: Object to the form. Calls for speculation.

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THE WITNESS: Yeah. I mean, it's a crazy question. The levels of asbestos detected in talcum powder are parts per million, not percentages. So it's -- it's just a -- it's a theoretical assumption that I wouldn't know how to approach.

BY MR. DEARING:

Q. It is a hypothetical for sure. So you don't know what your answer would be if it were established that one percent of the contents of a Johnson's baby powder bottle contained asbestos?

MR. HEGARTY: Objection, form.

THE WITNESS: I have no idea what asbestos on the skin would do. I don't -- I don't know that. So I can't have an opinion about it.

BY MR. DEARING:

Q. Well, is it your opinion that talcum powder applied to the perineum cannot enter the vagina?

A. Likely not in clinically significant amounts, no.

Q. Can you quantify what you mean by clinically significant amount?

A. Well, I mean if -- if -- if talcum powder hit the mucosa of the vagina, it would likely do

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nothing there because the squamous epithelium would not allow entry of the talc into the submucosa. From examining tens of thousands, hundreds -- maybe reaching 100,000 cervixes, endometrium, fallopian tubes and ovaries, I don't find it there. So I know that it doesn't go there in a quantity sufficient to elicit a reaction.

Q. Would that be true also if there were asbestos fibers that were applied to the perineum and it reached the internal structures of the vagina?

A. Well, my experience is the same. I have not seen asbestos in cervix, endometrium, fallopian tubes or ovaries.

Q. Well, hypothetically then, if asbestos were in the powder that was able to be introduced in the vagina, wouldn't you expect there to be some kind of reaction to the asbestos?

A. No, because the asbestos would have to get into the submucosa. That's why -- that's why you --

Q. Tell me where, anatomically, the submucosa is that you're referring to.

A. Certainly. So --

Q. Actually, I have a document. I finally

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get to mark an exhibit. Exhibit 1. Sorry, this is probably elementary to you, but I'm still learning it.

So I'm marking as Exhibit 1 what I believe is an anatomic diagram of the female reproductive tract. Does that look like an accurate diagram?

A. It's an adequate representation of the genital tract, yes.

Q. Is it accurate? I mean --

MR. HEGARTY: Objection to form.

BY MR. DEARING:

Q. As far as diagrams go. I know in the body things are different, but --

A. It shows the structures in a -- in an adequate way.

Q. Okay. I just have to prove --

A. The ovaries --

Q. -- in order to use it, I have to prove that it adequately represents what it says it represents. So does that adequately represent an image of the female reproductive tract?

A. Yes.

Q. Now tell me what mucosa you're referring to. Where is that?

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A. The mucosa is the dark pink colored part of the drawing here --

Q. Okay.

A. -- of the vagina. The submucosa in the cut section would be the lighter pink.

MR. DEARING: Let me mark a second diagram as Exhibit 2.

BY MR. DEARING:

Q. So this is a cross-section of the anatomy. Would you agree that that's an accurate depiction of the cross-section of the female reproductive tract?

A. Yes.

Q. Okay. Does that show the mucosa that you're talking about?

A. Yes.

Q. Okay. Can you show me in that diagram?

A. It is the one that's pointing by vagina.

Q. Okay.

A. The best way to show you the equivalence is if you just touch the inside of your cheek, that's like touching the mucosa of the vagina.

Q. Okay.

A. Okay? And then the submucosa you would have to scrape the lining off, which would cause a

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little bit of bleeding, and that's the submucosa. That's where all the blood vessels that feed -- keep the mucosa healthy are.

So -- so the -- squamous epithelium is the epithelium that we all have that's very protective. It's designed to be tough, not let things come out of the body or not let things get into the body. That's why you can take a shower and not bloat, right, because the skin doesn't let the water go inside of you. The same thing with the vagina. It protects. It doesn't allow things to get inside of the body.

Q. Okay. But we do know things get inside the body from the vagina; right?

MR. HEGARTY: Objection to form.

THE WITNESS: Yes, but -- but not into the vagina itself. Not into the submucosa of the vagina. You're referring to the travel up the genital tract.

BY MR. DEARING:

Q. Well, sure, so I'm just thinking -- I mean, sperm, obviously, doesn't get trapped in the mucosa.

A. Correct.

Q. It's able to travel all the way to the

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fallopian tube to the uterus.

A. Correct.

Q. And also as I understand it -- we may talk more about it in a little while -- in the case of endometriosis, do you agree that endometriosis primarily occurs when uterine tissue is sloughed off or somehow removed and travels the same path through the fallopian tube and implants on the ovary?

MR. HEGARTY: Objection to form.

THE WITNESS: That is the leading hypothesis for endometriosis.

BY MR. DEARING:

Q. And the mechanism or the -- the -- obviously uterine epithelium doesn't have motility, so it has to get there somehow. Is that by retrograde menstruation, in your opinion?

MR. HEGARTY: Objection to form.

THE WITNESS: Retrograde menstruation caused by uterine contraction, yes.

BY MR. DEARING:

Q. And so would you also agree that -- well, that the uterine tissue that sloughs off -- is that the right medical term? What happens to that?

A. It is a slough-off.

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Q. Okay.
A. It's a --
Q. Does it get trapped in the mucosa as -- the vaginal mucosa as well, or is it able to pass through that? I know it's already above it, but --
A. It will not be able to penetrate the vaginal mucosa.
Q. Okay. So I'm not sure why we're talking about the vaginal mucosa.
A. Because -- because I don't see talc anywhere in the genital tract. And I look at 50 samples a day.
Q. Oh, I see. Okay. Well --
A. You asked me initially --
Q. Right.
A. -- if I thought that talc from the perineum could get into the vagina. And I said not in clinically significant ways. But if you put talc in the vagina, it wouldn't do anything because the squamous epithelium is protective. It wouldn't let the talc go into the body there. Does it go up the genital tract? The answer is no.
Q. So if talc were to be introduced into the vagina and could pass the mucosa, would you expect

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it to be able to travel through the fallopian tube much the way endometrial tissue does during retrograde menstruation?
MR. HEGARTY: Objection to form.
THE WITNESS: I would not expect it to do that.
BY MR. DEARING:
Q. Why wouldn't it?
A. Because if it did, I would see it. I don't see it. Nobody else sees it either. Nobody reports talc in tissues of the genital tract. I don't find a single report in the world literature about talc being present in tissues of the genital tract. Now I'm not talking about --
Q. You actually cite studies that show that.
MR. HEGARTY: Let him finish his answer. Were you finished?
BY MR. DEARING:
Q. I'm sorry. I didn't mean to cut you off.
A. I know that there are people who grind up the tissues of the genital tract and find talc. I know that there are people who do SDS whatever testing on -- on -- on tissue blocks that claim that they find -- and they do probably find -- some talc. But it wasn't there when the -- when the

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tissue was vital.
Q. Well, you agree that there are published studies that show talc in ovarian and fallopian tube tissue that are within macrophages that are --
A. No.
Q. -- published in the literature.
A. Nope.
MR. HEGARTY: Objection to form.
THE WITNESS: Not in ovary or fallopian tube. If they are published studies that show it in a lymph node in the pelvis, but not in the ovary or fallopian tube.
BY MR. DEARING:
Q. How, in your opinion, did the talcum get to the pelvic lymph nodes?
A. Well, they didn't show that it was talc, by the way. They just saw particles within macrophages of a lymph node. There is no evidence that those particles were talc.
So how do particles get into a lymph node, into a pelvic lymph node? They can go in through abrasion to the perineum, an abrasion in the upper thigh.
(Exhibit 3 marked for identification.)
BY MR. DEARING:

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Q. I'm showing you what's been marked as Exhibit 3, which is a study by Dr. Sandra McDonald and other folks. And you cite this study in your report. And you cite it actually in all of your reports, specifically where you make the same statement. Let me find it. It's in the paragraph above the observational data paragraphs. And you state --
A. Page?
Q. Well, I'm looking at the Carl report.
A. Yes. Oh, okay.
Q. The Carl report. But you say it in all of your reports.
A. Okay.
Q. So the study we're referring to is called Migration of Talc From the Perineum to Multiple Pelvic Organ Sites, five case studies with correlative light and scanning electron microscopy by Dr. McDonald and five other physicians and scientists, right? And it was published in the American Journal of Clinical Pathology in 2019. And you cite to this in every one of your reports; right?
A. Yes.
Q. And you cite to it behind the sentence

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that says, "Studies reporting talc particles in gynecologic tissue are also unconvincing as they fail to corroborate their findings with the expected histological response to talc, which is necessary to rule out specimen contamination as a likely alternative explanation to their findings."

And then you testified just now that not a single report has demonstrated talc in macrophages in the ovaries or lymph nodes.

A. I said ovaries or fallopian tubes.

Q. Or fallopian tubes. I'm sorry. So first of all, are you familiar with this study?

A. Yes.

Q. You've obviously read it because you cite it in every report; right?

A. Yes, I'm very familiar with it.

Q. Okay. If you would -- well, the objective of this study, as stated in the abstract, says that genital talc use is associated with increased risk of ovarian carcinoma in epidemiologic studies. Finding talc in pelvic tissues in women with ovarian carcinoma who have used talc is important in documenting exposure and assessing talc's biologic potential, but tissue-based morphology studies have been rarely

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reported.

And then the method is important. Because they say we report five patients -- I'm sorry -- five patient cases with documented perineal talc exposure or use, each of whom had talc both by polarized light and scanning electron microscopy in multiple pelvic sites distant from the perineum.

And then the results state, "Talc particles were found in exposed patients typically within two or more of the following locations: pelvic region lymph nodes, cervix, uterine corpus, fallopian tubes, and ovaries."

And then I want to direct your attention specifically to image 4C, which is on page -- and incidentally, as the authors describe, the talc particles were studied not just by polarized light and microscopy, but by scanning electron microscopy with EDX, energy-dispersive x-ray spectroscopy, I think is how you pronounce that. Anyway, the point is, it's a process by which talc particles can be definitively identified; right?

MR. HEGARTY: Object to the form.

BY MR. DEARING:

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Q. I know SEM is not your expertise, but you agree that SEM with EDX capability can identify particles like talc?

MR. HEGARTY: Objection to the form.

THE WITNESS: It can identify that they're in the proper ratio, which the person who does this is just Dr. Godleski, gives himself a five percent wiggle room. Remember what I said, biology's not physics.

BY MR. DEARING:

Q. Right.

A. This is physics. If the thing doesn't hit it perfectly, then you're not sure that it's talc.

Q. Well, you would agree with me that five percent -- actually ten percent -- is accepted in particle identification, a ten percent variance?

A. By whom? Accepted by whom?

MR. HEGARTY: Objection.

BY MR. DEARING:

Q. By experts in the field of particle identification.

MR. HEGARTY: Objection to form.

THE WITNESS: I -- again, I'm not an expert in the area, so I'm not going to -- I'm not

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going to -- to absolutely say that it's not accurate. But in my opinion, if you are saying that something is a mineral, an exact mineral, that mineral should be spot on in its composition, not a little bit.

BY MR. DEARING:

Q. Well, let's -- hold that thought. Let's talk about this study.

A. Okay.

Q. Then I'll come back to that, okay? 'Cause that's an important point. But for purposes of these questions, unless you're going to say this is not talc that he's finding, I want to ask you specifically about image 4C. Are you able to find it yet?

A. Yeah, I have it.

Q. It says, "Scanning electron microscopy, SEM, at 500 times magnification with back-scattered electron imaging from the same general area as in A and B in that same image, but a different histologic section showing numerous back-scattered electron-positive particulates within the cytoplasm of macrophages similar to A, the majority of which has a spectrum characteristic of talc."

So would you agree with me that at

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least in that image, these scientists are saying they have identified talc within the cytoplasm of macrophages in that tissue?
MR. HEGARTY: Object to form.
THE WITNESS: Okay. In the -- in the H and E section, which is 4E, I will agree that those particles are within macrophages. In the SEM, which is F, you can't tell those particles are in macrophages.
BY MR. DEARING:
Q. Which image are you looking at? I'm looking at --
A. This one.
Q. -- four --
A. Four?
Q. C.
A. Oh.
Q. 4C is where I'm starting. We'll get to the others. But 4C is where I'm starting. That's where I just read from.
A. Right. So 4C, you can't tell that that's a macrophage.
Q. Well, the scientists thought they could tell it was a macrophage. They published in --
MR. HEGARTY: Objection to form.

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THE WITNESS: Well, they --
BY MR. DEARING:
Q. So you disagree with the scientists that published this paper? They're saying it's a macrophage and they're wrong?
A. I -- I say that they can't tell that those particles are inside a macrophage.
Q. Well, you would -- would you agree with me that you're not an SEM expert?
A. I am not.
Q. An expert in scanning electron microscopy?
A. I'm not an expert.
Q. Would you also agree with me then, or do you know, that when you're actually looking through the -- when you're actually looking at the SEM image on the computer, that it looks different than the two-dimensional photograph you're looking at in a published paper; right?
MR. HEGARTY: Objection to form.
THE WITNESS: It does not, because SEM is a two-dimensional mode of viewing tissue. You are only looking at the surface.
BY MR. DEARING:
Q. So it's your --

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A. A scanning electron microscopy looks only at the surface. It cannot look below the surface of the tissue.
Q. Actually, a variable pressure SEM does look below the surface of the tissue.
MR. HEGARTY: Objection.
BY MR. DEARING:
Q. Do you know what a variable pressure SEM is?
MR. HEGARTY: Objection to the form.
THE WITNESS: I am not.
BY MR. DEARING:
Q. Okay. Do you know that Dr. Godleski and his team are using variable pressure scanning electron microscopy to make these observations?
MR. HEGARTY: Objection to form.
THE WITNESS: I am completely unaware of that.
BY MR. DEARING:
Q. Okay. But it's your opinion that these authors got this wrong and that those -- those particles that they are saying in image 4C are in the cytoplasm of a macrophage are not?
A. Well, they -- they might be, but they can't say that because it's a two-dimensional mode

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of evaluating the tissue. And by the way, the -- Dr. Godleski finds more non-talc particles than talc particles in every single --
Q. True.
A. -- study that they make.
Q. True. He doesn't hide that. In every report he issues he identifies everything.
A. So statistically it's more likely those particles that we see in the H&E slides are not talc. They're something else.
Q. I understand. But the particles he's identified by scanning electron microscopy, which he says is in these macrophages, he is saying is talc. Well, not him, the authors, Dr. McDonald and Dr. Fan. By the way, do you know Dr. Fan, the microscopist from Brown?
A. I don't.
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. Do you know Dr. Welch? He's a gyn -- was a gyn pathologist.
A. I knew him, yes.
Q. Okay. And you know who Dr. Dave Cramer is; right?
A. Yes.

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Q. If you would also look at image 4F, which is in the next page, I think. Yep. And the authors there say that SEM from the same general area as D and E, but in a different -- different histologic section, showed numerous back-scattered electron-positive particulates within the cytoplasm of macrophages similar to C, and the majority having a spectrum characteristic of talc.

Is it your opinion that those images -- that the image 4F is not showing particles in a mac -- in macrophages?

A. I'm saying that the mode of examining it can't definitively say that, no. Yeah, that's what I'm saying.

Q. So you think that, although you're not an expert in the field of scanning electron microscopy, that you know more about this or you're able to make more accurate observations than the experts in the field of scanning electron microscopy?

MR. HEGARTY: Objection to form.

THE WITNESS: I can give you my opinion.

BY MR. DEARING:

Q. Okay. So as I understand it, you're not saying they're wrong, you're just saying they can't

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tell. Is that what you're saying?

MR. HEGARTY: Objection to form.

THE WITNESS: Correct.

BY MR. DEARING:

Q. Okay. You think that the American Journal of Clinical Pathology is a reputable journal, don't you? You've published in it, haven't you?

A. I'm very close friends with the editor in chief.

Q. Right. It's one of the best journals in the field, isn't it?

A. It's -- it's highly regarded.

Q. And of course this is a peer-reviewed publication; right?

A. Yes.

Q. Which means other peers in the specialty of the authors have reviewed this paper before it was allowed to be accepted to be published; right?

A. Yes.

Q. Would you also look at image 5H? There the authors write, again, another example of particulates within the cytoplasm of macrophages.

A. Same answer.

Q. And is it your opinion that you don't

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know whether those particles are within a macrophage?

A. Correct.

Q. But you agree with me that the authors and the experts in the scanning electron microscopy state that they are?

MR. HEGARTY: Objection to form.

THE WITNESS: They do state that, yes.

BY MR. DEARING:

Q. And then would you look at image 7D? And again, the authors write that this image shows numerous backscattered electron-positive particles within the cytoplasm of a macrophage.

A. Same answer.

Q. Okay. Looking at 7D and the way those particles are aligned in sort of a uniformed, encompassed fashion, doesn't it appear to you that those are macrophage because of the way they are and they're not just scattered amongst the tissue?

MR. HEGARTY: Objection to form.

THE WITNESS: There are many images that have been offered by these authors, both H&E and SEM, that appear aggregated but not within the cytoplasm of the cell in the H&E. And I -- so I can't tell.

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BY MR. DEARING:

Q. Well, let me ask you this. Whether you can tell definitively or not, doesn't the image in 7D at least look like particles in a macrophage? Isn't that what you would expect it to look like?

MR. HEGARTY: Objection to form.

THE WITNESS: I -- I -- so if you look at the H&E images -- so if you look at 4B, one of those cells is a macrophage and clearly has particles in its cytoplasm.

BY MR. DEARING:

Q. Which one?

A. Yes, I have it -- I gave you the wrong image.

Q. I agree with you on 4B, but --

A. No, it was -- it's -- I mean, it -- the magnification on some of these is just too small for me to see. So there are images in here where you have particles in macrophages, mainly in the lymph node. It's not surprising. The lymph node is where all the small particles are taken.

Q. Okay. So back to what started this dialogue was you made the comment that there are no publications that show talc in the macrophages of ovarian and fallopian tube tissue; right?

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A. I said --
MR. HEGARTY: Objection to form.
THE WITNESS: -- no reports of foreign body reaction to talc in ovaries or fallopian tubes.
BY MR. DEARING:
Q. So it's not that that hasn't been reported in the literature, it's that you don't necessarily agree with what their opinions are in the published literature; right?
MR. HEGARTY: Objection to form.
THE WITNESS: They don't show the right reaction to talc. They're -- they're basically taking particles that are likely contaminants, that are in the surfaces of the ovary and tube, or perineum -- they don't even have it in the ovary itself. They say adjacent tissue -- and they're saying that -- that is evidence that there was -- that there was migration of talc. I disagree with this paper, and I disagree with their conclusions.
BY MR. DEARING:
Q. But the statement that there are no publications that demonstrate that --
A. That demonstrate the foreign body

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reaction. They don't show a foreign body reaction here.
Q. Okay. Well, you just said that there's an H&E slide photo micrograph that shows particles in a macrophage.
A. In a lymph node, yes.
Q. In a lymph node. Okay.
A. Yeah.
Q. If those particles were talc, you would agree that that is an inflammatory reaction to talc in the lymph node; right?
MR. HEGARTY: Objection to form.
THE WITNESS: In the hypothetical that those were talc, then it would be a foreign body reaction to the talc, yes.
BY MR. DEARING:
Q. Okay.
A. An appropriate reaction.
Q. Okay. And I promised I'd come back to this. You were talking about particle identification and whether a ten percent variance in the anatomic ratio between magnesium and silicon is acceptable in the field. And I want to direct you to another study that you cited in every one of your reports, in the same string cite, to the

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statement that I just read about in your report, you say, "Studies reporting talc particles in gynecologic tissues are also unconvincing as they fail to corroborate their findings with the expected histological response to talc, which is necessary to rule out specimen contamination as a likely alternative explanation for their findings."
And you cite McDonald 2019 in Ultrastructural Pathology. Well, first of all, McDonald 2019 in Ultrastructural Pathology isn't even about what that sentence, is it? This is a copy of that study.
And if you recall, in that study, the scientists looked at Johnson's baby powder under a scanning electron microscope to discern what the variations were in the magnesium and silicon ratios. And they determined that a .05 percent, or .05 or a five percent variance, is conservative, to say the least, in determining whether the particles are talc. Do you remember that from that study?
MR. HEGARTY: Objection to form.
THE WITNESS: I'm sorry, I have to read it.
BY MR. DEARING:
Q. Take your time.

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A. Yes, the authors themselves say is reasonably close. So, I mean --
Q. What is reasonably close?
A. That's what they state. This standard deviation, da, da, da, da, the current use, plus or minus five percent diagnostic range, is thus reasonably close to this study's whatever range.
Q. Reasonably close to what they actually observed in Johnson's baby powder is what you're saying; right?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. So what they did, if you'll recall from the study, is they looked at Johnson's baby powder under a scanning electron microscope, saw the variation in the talc particles of the magnesium and silicon ratio, and then compared that to the particles they were finding in tissue of women who used Johnson's baby powder, and they were comparing the two.
A. I'm going to go on the record as saying I accept their plus or minus five percent, okay? So we don't have to argue about it.
Q. I wish you had led with that. We're not arguing. I just want to make sure we're being

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accurate here. But you cite that for this proposition in your report about studies reporting talc particles in gynecologic tissues are unconvincing and fail to corroborate their findings. But this study doesn't really address that statement, does it?

MR. HEGARTY: Objection to form.

BY MR. DEARING:

Q. I mean, you can disagree with me, but --

A. I'd rather not.

Q. You know what, I'll withdraw that question. It's not necessary. You don't have to spend time on it.

I will point out one other cite of that list of studies. For that same proposition you cite Campion 2018, and I don't have that with me. But if you'll recall, Campion 2018 was a comparison of Raman's spectroscopy identification of talc with Dr. Godleski's SEM identification of talc, and found that they were identical. Do you remember that?

A. I don't --

MR. HEGARTY: Objection to form.

THE WITNESS: -- off the top of my head.

BY MR. DEARING:

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Q. Do you know anything about Raman spectroscopy?

A. Very little.

Q. Do you understand that Raman spectroscopy is probably the most precise way to identify a particle because it is able to identify the unique way that the atoms are reacting to each other in a unique signature that each different element has?

MR. HEGARTY: Objection to form.

BY MR. DEARING:

Q. That's all I understand about it, so --

A. I think your description is about as vague as I would be able to --

Q. Okay.

A. -- give it.

Q. The point is, you cite Campion 2018. And I'm asking, I guess, if you remember that that was a comparison study, sort of a proof of method study, that compared SEM identification of talc in this .05 variance and Raman spectroscopy identification of talc, and they -- and it established that the SEM was just as accurate as the Raman. Do you remember that about that study?

MR. HEGARTY: Objection to form.

THE WITNESS: I actually don't remember it.

BY MR. DEARING:

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Q. Okay.

A. Off the top of my head.

Q. It's a study I'd like to forget.

A. Yeah.

Q. Because it blows my mind. In this McDonald study and lots of others, one of the things they discussed here is the morphology of talc. Are you familiar with the different morphologies of talc, in other words, that talc is found in both a plate form and a fibrous form?

MR. HEGARTY: Objection, form.

THE WITNESS: I am familiar with that, yes.

BY MR. DEARING:

Q. Have you ever looked at Johnson's baby powder under a microscope?

A. I have not looked at Johnson's baby powder under a microscope.

Q. Have you ever seen photomicrographs of Johnson's baby powder under a microscope other than those that are contained in this McDonald study?

A. I have seen representations of talc -- microscopic representations of talc, yes.

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And I have seen actual talc in tissues as well.

Q. I'm referring specifically to Johnson's baby powder, though. Have you seen Johnson's baby powder, the talc -- have you observed Johnson's talc-based baby powder under a microscope?

A. I have not.

Q. We were talking about endometriosis, and before that we were talking about macrophages. Let me ask you this.

If endometrial cells were to slough off from the uterus, they'd be transported and implanted on the ovary, or I guess even hung up in the epithelial tissue of the fallopian tube, wouldn't that attract macrophages because it's a cell that shouldn't be there -- or it's a tissue that shouldn't be there?

MR. HEGARTY: Objection to form.

THE WITNESS: It does not need to attract macrophages, no.

BY MR. DEARING:

Q. Does it occasionally attract macrophages?

A. Yes, if the endometriosis bleeds.

Q. Okay. I should have been more general. Does it attract any kind of inflammatory mediators, whether lymphocyte, anything?

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A. Rarely. Most of the time it's just sitting in the tissue.
Q. Isn't it true that endometriosis is a condition that occurs when endometrial tissue is sloughed off and then later implanted in parts of the body that it doesn't belong, causing some kind of reaction?
A. That is the favored hypothesis. There are other hypotheses, but that is the favored hypothesis and the mechanism that I believe causes endometriosis.
Q. And what kind of reaction occurs when those cells are displaced and implant somewhere else?
A. The types of reactions are varied. Sometimes you can't see a reaction at all, so you just -- you're looking at the tissue and then you run into an endometrial gland with stroma. The tissue surrounding it maintains its normal appearance, no inflammation, no deviance from its normal appearance.
Other times -- and this is frequent -- you will be looking at tissue and find the endometrial gland and endometrial stroma, and there would be a fibrous reaction to it. So let's

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say that you found it in the pelvic adipose tissue, fatty tissue of the pelvis. You will see adipose tissue which is fat. And then you would get to the endometriotic gland and it would be surrounded by fibrous tissue which doesn't belong there.
Q. Is it the fibrous tissue that causes the adhesions we were talking about earlier?
A. It is the reaction -- the fibrotic reaction to endometriosis that causes adhesions.
Q. And does that endometrial tissue response also occur on the ovary?
A. It does.
Q. You've opined that endometriosis is a risk factor for endometrial carcinoma of the ovary. How does it transition from endometriosis to endometrioid carcinoma?
A. So it's a complex series of genetic anomalies. Many, if not most endometriosis have some of the same mutations that are found in endometrial carcinoma. I believe it's ARIDA1 and PIC3A mutations are frequently found in endometriosis. Those are abnormal mutations that are associated with cancer.
So we know that for whatever reason, this endometrium that is retrogradely menstruated

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onto the pelvis acquires these mutations which are not normally seen in parietal endometrium in the uterus.
So once you start getting accumulating mutations, it's -- it's very easy to understand that it will progress to carcinoma. Now, what percentage of women with endometriosis develop endometrioma carcinoma? Not close to half of them. But some of them do.
Q. You mentioned that surgical glove manufacturers stopped dusting their gloves with talc decades ago because it was leaving talc inside the body and causing inflammatory reactions. Are you aware that the condom industry stopped dusting condoms with talc decades ago as well for much the same reason?
MR. HEGARTY: Objection to form.
THE WITNESS: Well, they stopped dusting with talc, but not for the same reason.
BY MR. DEARING:
Q. Why do you think the condom industry stopped dusting their condoms with talc?
A. I have no idea. I'm not an expert in condoms.
Q. Would you expect condoms to introduce

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talc into the female reproductive tract if they were dusted with talc?
A. I would not expect that to happen.
Q. That because you think the talc would not escape the mucosa that you described before?
A. It would not go into the upper genital tract.
Q. If talc could somehow reach the uterus, would you agree that it could be transported the same way endometrial tissue can be transported, and implant on the ovaries --
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. -- to retrograde menstruation?
A. No. The ability of the female genital tract to allow things into the -- into the upper genital tract is extremely selective.
Q. How so?
A. Well, to remain as a viable species, it needs to allow sperm to go up. But --
Q. But if it was extremely selective -- I'm sorry. Go ahead. It shouldn't allow endometrial tissue to go up because it's damaging.
A. Well, the endometrial's already up. It's already in the cavity.

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Q. Okay.
A. There's no cervical barrier for that to retrograde menstruate.
Q. Okay.
A. As you might be aware or not, but I'll make you aware --
Q. Presume I'm not.
A. -- there are ten to the ninth to ten to the twelfth bacteria in the vagina. The endometrium is sterile. Why don't bacteria go into the plump? Well, it's very selective, right? It doesn't allow certain things to go up. One of the things that it doesn't allow to go up would be talc. Because hundreds of thousands of people use talc, or used to use talc in their -- in their perineal area, and we did not see talc granulomas anywhere.
Q. I think the question is how does it prevent the talc from going up, or how does it prevent the bacteria from going up?
A. It is a wonderful biological process that we can't explain. But what we do know is it doesn't happen. I mean, you can't -- you can't say that bacteria go into the endometrial cavity when we know that the endometrial cavity is sterile.

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Q. Well, some viruses do, don't they?
A. And some bacteria occasionally do also. Like gonorrhea is very good at that. But it probably doesn't go up the cervix. It probably goes around into the tissues. So, anyway, needless to say, the genital tract wouldn't survive if bacteria could go up the cervix.
Q. Okay. So your opinion is talc cannot migrate from the vagina to the reproductive tract, but you're not sure why?
MR. HEGARTY: Objection to form.
THE WITNESS: Correct. I haven't studied it. I know -- I've read many animal studies that have tried to -- to get talc to go up the upper genital tract, and most of them have failed, even though they inject it into the fornix and even into the uterus.
BY MR. DEARING:
Q. Well, you agree there are some human studies that actually show that carbon particles, for example, were used that did migrate. You may take exception to how they were introduced into the body, but you would agree that there are at least some studies that purport to show that particles can migrate to the ovaries?

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A. Some --
MR. HEGARTY: Objection to form.
THE WITNESS: Some particles have been shown to migrate.
BY MR. DEARING:
Q. Okay. You state in all these reports that the talc found -- well, let me just ask you.
Isn't it true that if talc is found in a macrophage, that cannot be the product of contamination?
A. You are correct.
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. I'm sorry about this. I don't remember where we landed. Do you believe that environmental factors can play a role in the development of epithelial cancers?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. We started the conversation. I honestly don't remember where we ended up.
A. Environmental factors. I think if a -- the answer is no, I don't -- I don't believe environmental factors. One of the things that I was going to speculate was maybe ionizing

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radiation.
Q. Right.
A. But women are treated with radiation for cervical cancer and they don't develop ovarian cancer. So it's unlikely to happen.
Q. Do you agree that one of the protective factors for ovarian cancer is tubal ligation?
A. Yes.
Q. What is your opinion as to how tubal ligation is protective? Someone opined it prevents environmental exposures from transversing the fallopian tubes. But I assume you have a different take?
MR. HEGARTY: Objection to form.
THE WITNESS: Oh, it could be many reasons. It could -- for one thing, tubal ligation arrests the motility of the fallopian tube. It interferes with the motility of the fallopian tube. Therefore it could -- it could possibly prevent more tubal cells to enter the ovary. That's a possible mechanism. I'm speculating now, because I've not studied this. But it doesn't have to be prevention of environmental factors from getting into the ovary.
BY MR. DEARING:

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Q. Well, because of what you said about environmental factors, you don't believe that tubal ligation prevents environmental exposures from -- from transversing the fallopian tubes because they weren't doing that anyway; right?
MR. HEGARTY: Objection.
THE WITNESS: Correct.
BY MR. DEARING:
Q. So in your opinion the reason tubal ligations are protective against ovarian cancer is because a tubal ligation will prevent tubal cells from transversing the fallopian tube and implanting on the ovary or thereabout?
MR. HEGARTY: Objection to form.
THE WITNESS: I speculate --
MR. HEGARTY: Go ahead.
THE WITNESS: I speculate that that may be one of the factors, yes.
BY MR. DEARING:
Q. Can you think of any other reason why that might be protective?
A. I -- I cannot. And I have to confess I haven't thought that much about it.
Q. Would you agree with me that Blaustein's pathology textbook, the pathology of the female

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genital tract, is an authoritative, reliable source for female pathology issues?
MR. HEGARTY: Objection to form.
THE WITNESS: That's another term that carries a lot of luggage, authoritative. So I think it is -- I think that it is a respected source of information. It is extremely educational. It is the book -- the textbook that I prefer to use to confirm my opinions on things, yes.
BY MR. DEARING:
Q. Because there was an objection to that question, let me ask it a different way.
What is your opinion -- I'm sorry, you may just repeat yourself, but what is your opinion about Blaustein's Pathology of the Female Genital Tract?
A. I think it is a -- an excellent, comprehensive textbook that is highly respected.
Q. Are there any other pathology textbooks that you would defer to if you had a question and you feel like you need to do a little research?
A. Sure, there's one by Oliva.
Q. How do you spell that?
A. O-L-I-V-A, that is quite good. Gosh, I

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have four or five of them sitting on my shelf.
Q. What about other sources besides textbooks? Where would you go to -- to research a particular issue in GYN pathology?
A. I use the search engine PubMed on a daily basis.
Q. Any other sources specifically that you would consider reliable that you would go to for questions you might have?
A. Not that I can think of. I mean, Blaustein's is -- is very comprehensive and -- and well edited throughout the years. So -- so I -- I rely on it for most of the diagnostic issues that come up that I have -- that I'm not completely certain about.
MR. DEARING: Okay. It's noon. Do you guys want to keep going or take a short break for lunch?
MR. HEGARTY: Probably take a short break. Not for lunch, but it's time to take a short break.
MR. DEARING: Okay.
(Break taken.)
BY MR. DEARING:
Q. Doctor, let me switch gears a little bit.

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Just a few more general topics, and then we'll move on to specific cases. But I want to ask you some questions about asbestos.
Do you intend to offer any opinions about asbestos and whether it can contribute to cause ovarian cancer?
MR. HEGARTY: Objection to form.
THE WITNESS: Yes. I intend to render the opinion that asbestos does not cause epithelium ovarian cancer.
BY MR. DEARING:
Q. Do you consider yourself an expert in the field of asbestos?
A. I do not. I consider myself a pathologist who's experienced in neoplasms caused by asbestos.
Q. Have you ever published on any topics associated with asbestos and the types of cancer that it causes?
A. I have not.
Q. You agree that asbestos is a known human carcinogen?
A. I agree.
Q. Have you ever lectured on asbestos-related conditions?

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A. I have not.
Q. Have you ever diagnosed anyone with an asbestos-related condition?
A. Many times.
Q. Have you ever diagnosed anyone with peritoneal mesothelioma?
A. Yes.
Q. And tell me, how do you define a ferruginous body?
A. Ferruginous body is a microscopic particle. It is long. When stained with hematoxylin and eosin, it stains dark purple-black. It has a geography to it, so usually it contains wider areas interspersed with narrow areas interspersed with wider areas. So it's -- and it's a long particle.
Q. Does the way that a ferruginous body forms depend on the morphology of the asbestos fiber itself? In other words, ferruginous bodies are formed around asbestos fibers; right?
A. Correct.
Q. And so the shape of the ferruginous body, for example, the morphology, is dependent upon the shape of morphology of the asbestos fiber itself; right?

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A. Yes.
Q. Do ferruginous bodies form wherever asbestos is found in the body?
A. Yes.
Q. And they're called ferruginous bodies because it's iron that actually forms around the asbestos fiber; right?
A. Correct.
Q. Are ferruginous bodies birefringent?
A. No.
Q. Where all have you observed ferruginous bodies in your career?
A. Where?
Q. Where, like what -- in what organs? I know the lung, obviously.
A. The pleura.
Q. The pleura.
A. Have I seen it in lung? I don't remember if I've seen it in lung, but the pleura for sure, and peritoneum.
Q. So if a ferruginous body is forming in the peritoneum, presumably the peritoneum had asbestos exposure. How did asbestos get into the peritoneum, in your opinion?
A. So -- and these are explanations that have been given to me by experts in the field. Because of the shape of the asbestos fiber, it is thought to be able to traverse the diaphragm and reach the peritoneum.

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Q. What would be the source of exposure?
A. Inhalation.
Q. So you say someone else essentially told you that. Do you have any opinions yourself, or are you just relying on what those experts told you as to how it got there?
A. I don't have any personal experience doing research in the matter.
Q. Would you expect asbestos and ovarian tissue to form ferruginous bodies as well?
A. Yes.
Q. You said that talc found in these plaintiffs' tissues must be contamination. Is that also your opinion about asbestos? If asbestos was found in the gynecologic tissue of these plaintiffs, is it your opinion that that's also contamination?
MR. HEGARTY: Objection to form.
THE WITNESS: I haven't heard of asbestos being found in these tissues, so I -- I don't know what I would think.

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BY MR. DEARING:
Q. If inhaled asbestos can reach the peritoneum, can it also reach the ovaries?
MR. HEGARTY: Objection to form.
THE WITNESS: Theoretically, yes.
BY MR. DEARING:
Q. Hospital labs like yours are not contaminated with asbestos, are they, as a general rule?
A. There's probably a level of environmental asbestos that would be impossible to reduce to zero. That being said, it is a very, very, very tiny amount.
Q. Is the amount so small that it's not likely to end up on a tissue block?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. Or in a tissue block, I should say.
A. Unlikely to end up in a tissue block from environmental exposure.
Q. What is your opinion as to what types of cancer is caused by asbestos?
A. There's an increase -- obviously, the number one type is mesothelioma, but there is an increase in epithelial lung cancer when exposed to

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asbestos.
Q. Are epithelial cells in the lung similar morphologically and organically to epithelial cells of the ovary?
A. No, they're extremely different.
Q. Okay. You've testified that asbestos can cause peritoneal carcinomas; right?
A. Mesothelioma.
Q. Mesothelioma. And lung mesothelioma. Can asbestos cause cancer anywhere else in the body, in your opinion?
A. Not that I've heard of.
Q. Well, are you aware that IARC has stated that asbestos can cause ovarian cancer?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. You know who IARC is?
A. Yeah, yeah. They are basing that on an article that misclassifies ovarian tumors.
Q. So you're aware they made the statement?
A. Yeah.
Q. You just disagree?
A. I disagree with a lot of things that IARC says. I wouldn't be drinking coffee if I believed IARC.

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Q. We all take calculated risks.
Do you know why asbestos is carcinogenic, in other words, how it causes cancer?
A. Yes.
Q. Can you enlighten me?
A. Sure. The -- it causes persistent cell destruction.
Q. Okay.
A. Persistent cell destruction means persistent increased cellular reproductive tract, which means increase in mutations.
Q. How does it do that?
A. Physically.
Q. So the morphology physically damages or kills cells?
A. Correct. It punctures cells.
Q. Would it have to actually damage the DNA of the cell in order to cause the reproductive tract problem, or just killing the cell itself is encouraging more cells to be created?
A. Correct, it's killing the cell, causing the cells around it to replicate to cover that defect. That's what causes it. The asbestos itself does not alter DNA.
Q. Does the asbestos invoke an inflammatory

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reaction?
A. Yes.
Q. Okay. Is that also part of the carcinogenesis?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. For example, I imagine one of the cells it kills is a macrophage; right?
A. Yes, it kills many macrophages. But the -- but the tissues through which it traverse are mainly mesothelial lined, and that's where the neoplasia really occurs.
Q. So are you saying the asbestos fiber is mobile, it is moving and killing cells, or that cells are attracted to it and --
A. No, the -- the asbestos fibers are not motile, but they move due to their shape.
Q. And they're just killing cells as they go?
A. I -- that is the accepted theory.
Q. And is that true of a single asbestos fiber?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. In other words, sometimes asbestos fibers

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are found in bundles. Sometimes they're found individually. Can you differentiate whether a single asbestos fiber can cause the kind of cell damage you're talking about?
A. It can. But again, you're dealing with statistics and probabilities, right? So if you have one fiber killing X number of cells, what are the odds that a mutation will take place versus if you have 10,000 asbestos fibers killing cells. And I think that's why people who have environmental exposure are the ones who are at risk for these tumors, whereas people like you and me who undoubtedly have asbestos in our bodies, don't. Because one -- one fiber just -- the probabilities are stacked against it.
Q. And I'm not suggesting just one fiber in the body is all there was. I'm just saying an individual fiber. There may be millions of them. But an individual fiber as it travels is doing this kind of cell damage that you're describing?
A. Yes.
Q. Okay. Is there anything about the chemical composition of asbestos that's carcinogenic, or is it just morphology, or do we know?

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A. As far as I know, it's only the morphology.
Q. So you mentioned that IARC got it wrong because of a misclassification. Can you explain what you mean by that?
A. Yeah. The study that found that asbestos caused epithelial ovarian cancer did not -- did not -- they got their information mainly from cancer registry. So they didn't review those tumors. I believe years later they did a retrospective analysis of those tumors with immunochemistry and found that most of them were mesotheliomas.
Q. Of the ovary?
A. Yes.
Q. Okay. How do you distinguish a mesothelioma of the ovary as opposed to an epithelial ovarian cancer?
A. So in some instances you can do it with morphology alone, but in some instances you actually have to use immunohistochemistry which was not available when they published that article.
Q. Would your typical hospital pathologist or community pathologist looking at surgical slides immediately be able to differentiate between an

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ovarian mesothelioma and ovarian carcinoma?
A. Like I said, in some instances it's quite easy. So in the -- in the spindle mesotheliomas, you don't see that kind of morphology in ovarian cancer, but in the papillary mesotheliomas they can look very similar to serous carcinomas, in which case you would do immunohistochemistry.
Immunohistochemistry today is available to pathologists in all hospitals and labs. And, gosh, I don't -- I would say probably 99 percent of ovarian carcinomas have a -- undergo an extensive panel of immunohistochemistry.
Q. So serous carcinoma makes up what, probably 80 percent of ovarian cancers that are diagnosed?
A. 70 is the number that I rely on.
Q. And then a high percentage of that 70 percent are papillary serous carcinomas; right?
A. You know, they've stopped classifying them as papillary versus nonpapillary.
Q. Okay. Well, I was just asking because if a pathologist -- a surgical pathologist is looking at papillary series -- papillary serous carcinoma, is it possible that they will misdiagnose that when it might really be a papillary mesothelioma in the

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ovary?
MR. HEGARTY: Object to the form.
THE WITNESS: It's very possible, yes.
BY MR. DEARING:
Q. Since you're an anatomic pathologist, can you walk me through anatomically how inhaled asbestos fibers could reach the peritoneum and potentially the ovary?
A. So we know that it reaches -- it penetrates and passes through the tissue because it has to for inhaled asbestos to reach the pleura.
Q. Okay.
A. Most mesotheliomas of the chest occur in the parietal pleura, which is the chest wall side rather than the lung side. You can get mesothelioma starting on the lung side, but most are actually parietal pleura. So it has to go into the bronchus, to the air sacs of the lung. Once it's in the air sacs of the lung, it has to move out of the lung through the visceral pleura, which is the lining that covers the lung, and go to the parietal pleura, which covers the chest wall. So we know it can do that.
And in industrial exposures sometimes very easy to find ferruginous bodies in the

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parietal pleura. Similarly, it can leave the lung, traverse the diaphragm, and enter the peritoneal cavity.
Q. So it's not traveling through lymphatic space, it's piercing tissue and going through tissue itself?
A. That is the theory, yes.
Q. Well, could it also travel through lymphatic channels?
MR. HEGARTY: Objection to form.
THE WITNESS: Yeah, I -- I don't think it could because of its shape. It would get stuck a lot.
BY MR. DEARING:
Q. I know I've bounced around this next topic a little bit. I'm sorry, I need to put it in a more organized way, so I'm just going to ask you some questions.
It's true that you don't consider yourself an expert in the field of SEM EDX; right?
A. Right.
Q. And you also don't consider yourself an expert in the field of transmission of electron microscopy and EDX; correct?
A. Correct.

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Q. And I think you said also you don't consider yourself an expert in Raman spectroscopy?
A. Correct again.
Q. And you have no training in any of those three microscopy techniques?
A. I have training in transmission electromicroscopy as part of diagnosing tumors. Haven't used it in decades.
Q. I've been told it's changed some over the decades. It's improved.
MR. HEGARTY: Objection to form.
THE WITNESS: TEM -- TEM hasn't changed that much. My renal pathologist uses it every day.
BY MR. DEARING:
Q. In every report you address Dr. Godleski's findings. And to be clear, it's not your testimony that he did not identify talc properly; right?
A. Correct.
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. That was a double negative. You're not testifying or opining that he misidentified particles as talc; correct?
MR. HEGARTY: Objection, form.

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THE WITNESS: I am not.
BY MR. DEARING:
Q. The same would apply to asbestos. If he identified asbestos, you're not challenging that identification, are you?
MR. HEGARTY: Objection, form.
THE WITNESS: I would not challenge it.
BY MR. DEARING:
Q. The Medical College of Wisconsin and its affiliated hospitals and labs, they have scanning electron microscopy capability; right?
A. Yes.
Q. And I think you just said you also use TEM in these facilities; right?
A. Yes.
Q. And they have highly skilled, qualified microscopists to operate them?
A. Yes.
Q. And you didn't consult with any other microscopists or pathologists about any of the tissue that you reviewed in these cases; right?
A. I have not.
Q. Okay. Let's start looking at some specific reports. If we can, let's start with Brandi Carl.

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MR. DEARING: And I e-mailed Susan the list, the order.
MR. HEGARTY: Yeah.
MR. DEARING: I'm not married --
MR. HEGARTY: We have it. Yeah, you don't have to be married to that order. You can go in whatever order you want.
MR. DEARING: I was going to say, if you wanted a specific order --
MR. HEGARTY: No, that's fine.
MR. DEARING: All right. Let's start with Brandi Carl then.
BY MR. DEARING:
Q. First of all, does your report contain all of your opinions that you intend to offer in this case?
A. Unless asked something that would -- that would prompt my -- an opinion that is -- that I haven't thought of, yes, it contains my opinions.
Q. Are there any other materials that are not listed on your reference list that you're relying on for your opinions in this matter?
A. No.
Q. What did Johnson & Johnson lawyers ask you to do in this case?

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A. They asked me to look at the pathology of Ms. Carl's tumor and see if there was any evidence that there was talc present in her tissues that could have influenced the genesis of this tumor.
Q. In your opinion, did Ms. Carl's cancer -- strike that.
In your opinion, was Mrs. Carl's cancer properly diagnosed by her treating pathologist?
A. Yes.
Q. Do you disagree with any of the statements or opinions of Ms. Carl's treating pathologist?
MR. HEGARTY: Objection.
BY MR. DEARING:
Q. Incidentally, I have all the pathology reports with me if you need to look at any of them.
A. Yes, I did not believe that Ms. Carl's -- Ms. Carl had invasive implants. I thought her implants were noninvasive.
Q. What's the basis of your opinion?
A. The morphology of the implants.
Q. That's something you actually observed on the slides?
A. Yes.

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Q. Is there anything else -- any other pathology opinions that you disagree with?
A. Yes. I disagreed with microinvasion. I thought it was just a serous borderline.
Q. Okay. Incidentally, what's the difference between micropapillary serous borderline and papillary serous?
A. There's an important distinction. Micropapillary refers to a very specific morphologic trait where instead of the tumor having hierarchal branching, meaning thicker papillae leading to thinner papillae, the micropapillary borderlines contain mainly the same size papillae. And these papillae, instead of having just a single or a few layers of cells, contain very, very tall accumulations of epithelium.
This morphologic appearance correlates with invasive implants in the peritoneum. It's not necessary sequela of the micropapillary, but more the percentage of micropapillary tumors with invasive implants is much, much higher than that of a serous borderline papillary tumor.
Q. It's your opinion that she had a serous borderline tumor that was not invasive; is that right?

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A. Correct.
Q. Is there any clinical significance to that distinction with regard to treatment or outcomes?
A. Yes. Microinvasive borderlines have the same prognosis as borderline tumors. They would not be -- should not be treated differently. Invasive implants, on the other hand, change the therapy for the patient.
Q. So invasive borderline tumors, do they require more aggressive treatment?
A. So you -- you said invasive. I used the term microinvasive, which is what the pathologist called it.
Q. Okay.
A. Microinvasive borderlines do not require additional therapy.
Q. Okay. So is there any clinical distinction between serous borderline and microinvasive serous borderline?
A. There is a distinction in that the microinvasive is actually invading. But that invasion, if it's smaller than, I think it's two millimeters, does not alter the prognosis of the patient, therefore does not require therapy.

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Q. Okay. So the purpose of you making that distinction is just you observed it differently, is that all?
A. Correct.
Q. Okay. Are you saying that it -- well, let me just ask you. Do you think that she received proper care and treatment?
A. So she received Taxol copper platinum, likely because of the invasive implants. She -- you can offer an advanced stage serous borderline tumor without invasive implants chemotherapy, but some people would actually observe instead of treat. But she received accepted treatment for her tumor.
Q. Very delicately stated.
A. I would not be able to say that was wrong.
Q. I understand.
A. It's not. Because some oncologists will treat. Some oncologists will observe.
Q. So the only practical distinction between your diagnosis and the treating pathologist's is if it is invasive, then Taxol copper platinum may be the proper course. If it's not invasive, then it may be something you just remove and observe?

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A. Or give chemo to. So we're talking about not the tumor itself, but the implants.
Q. Okay.
A. Okay. If a pathologist -- if I diagnose somebody with invasive implants, I would say that 95 to 99 percent of oncologists would give chemotherapy. If I diagnose somebody with noninvasive implants, I would say maybe half of the oncologists would watch.
Q. Okay.
A. So -- but again, both are accepted ways of managing your patient.
Q. Is there anything else -- any other pathological opinions that you disagree with?
A. No.
Q. What is your understanding of Ms. Carl's usage of Johnson's baby powder or talcum powder products, or do you know?
A. I don't remember.
Q. Do you think that's information you had at one time, or is that not relevant to your opinions?
A. It's not relevant to my opinion.
Q. Did you make any new slides from Ms. Carl's tissue, or did you review surgical

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slides that already existed?
A. I reviewed surgical slides that already existed.
Q. And did you study the tissue blocks that were made in her case?
A. I did not.
Q. Did the lawyers even send you the tissue blocks in this case?
A. No.
Q. Did you request to see them?
A. No.
Q. I guess, let me just ask you across the board. Did they send you tissue blocks in any of these cases, any of these seven? And if you prefer, I'll ask you for each one, but --
A. No, no, no. I'm just trying to think. I did not receive tissue blocks on any of these cases.
Q. Okay. Did you request tissue blocks?
A. I did not.
Q. Is that because you didn't think you would find anything useful in the tissue blocks?
A. Correct. I'm a firm believer that the representative section adequately allows me to diagnose the conditions that the patient has.

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Q. You would agree with me, wouldn't you, that Dr. Godleski provided to the Johnson & Johnson lawyers, and presumably to you, the precise locations of particles that he identified in tissue blocks; right?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. And told you what blocks they came from, obviously?
A. Yes, he provided the blocks where it came from.
Q. And also in the data that he provided showed the exact coordinates of where those particles were located, right, by SEM?
A. I was actually unaware of that.
Q. Okay. Well, assuming that he provided the coordinates and the blocks, isn't it true that you could have asked colleagues in the SEM department here to look at the same blocks and look at the exact same particles that Dr. Godleski looked at?
A. But I wouldn't need to do that.
Q. Right. I know you felt like you didn't need to, but you could have done that, couldn't you, if you wanted to?

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A. For what purpose?
Q. Whatever purpose you wanted. I'm just asking if it could be done.
A. It could be done, yeah, sure.
Q. Okay. Looking specifically at your report -- let me just ask you. Can you estimate about how many different cases you've reviewed for Johnson & Johnson -- or for the lawyers for Johnson & Johnson over the past --
A. Twelve years.
Q. -- twelve years since you got involved in this litigation?
A. I would say in the neighborhood of 30.
Q. I can identify probably 15 off the top of my head that actually went to trial or -- actually, more than that. Well, 30 is your number, you think?
A. About, yeah. I mean, it's an estimate.
Q. You state in here in the first paragraph of your report, and first paragraph of every report, one of the things that you looked at is whether there's histologic evidence supporting internal exposure to talc-based body powder. And then later on you say there is not.
Isn't it true that you have never once

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said that there is histologic evidence supporting internal exposure to talcum-based baby powder in any of the cases that you've looked at for the lawyers for Johnson & Johnson?
A. There's no evidence for it being talc; correct. There are, I believe, two cases in this group where I see particles and macrophages in lymph nodes.
Q. What is the mean age of women with serous borderline tumors? I know the mean age for serous carcinomas, for high-grade serous, is 65 or so, but I didn't see -- and maybe there isn't one.
A. It's two decades earlier in life. So it's in the fifth decade of life.
Q. So women in their 50s typically?
A. Women in their 40s.
Q. In their 40s.
A. Yeah.
Q. There seems to be about a 20-year disparity between high-grade serous carcinoma, the mean age of women at 65, and low-grade serous carcinoma, age 43. What's the explanation for the disparity?
A. They're two different, entirely different, tumor processes. And I don't know -- I

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don't think anybody knows why the high-grade serous carcinoma doesn't happen earlier. But certainly neoplasms are different enough to not be surprising -- for it not to be surprising that they differ in many aspects.

Q. What is it about low-grade serous carcinomas that cause them to be found in much younger women.

A. That they occur sooner.

Q. Well, I know. But why are they occurring sooner than high-grade serous?

A. It likely has to do with the mutations that they develop that -- that manifest themselves earlier in life.

Q. In your high-grade serous carcinoma paragraph, you don't mention STIC lesions. Is it your opinion that most serous carcinomas began in the fallopian tube, or is that an outdated theory?

MR. HEGARTY: Objection to form.

BY MR. DEARING:

Q. Or you just disagree with it?

A. I am in the camp that believes that most ovarian carcinomas occur -- start in the ovary from fallopian tube epithelium.

Q. Okay. That's different than a STIC

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lesion; right?

A. It is different than a STIC lesion.

Q. It's S-T-I-C.

In your opinion, what is the carcinogenesis of serous borderline tumors? In other words, how are they formed?

A. They form after serous cells within the ovary undergo several types of mutations, and those would be BRAF and KRAS mutations.

Q. Any idea what causes those mutations?

A. Likely just mismatch repair gene deficiencies.

Q. You say in the second paragraph on page 4, "Like most cancers, ovarian cancers develop as a result of genetic mutations, whether inherited or acquired. To date, old age, family history of ovarian or breast cancer, and inherited mutations in known cancer susceptibility genes, are the strongest risk factors associated with the development of ovarian cancer."

When you say family history of ovarian and breast cancer, you're referring to first-degree relatives; correct?

A. First and second.

Q. Oh, you're including second-degree?

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A. Yeah.

Q. Then you say -- well, in that first sentence you said, "Like most cancers, ovarian cancers develop as a result of genetic mutations whether inherited or acquired." By acquired, are you referring to sporadic mutations?

A. Yes.

Q. You're not including environmental exposure in acquired mutations; is that right?

A. I am not.

Q. You discuss later on on that page Ms. Carl's family history. And you state that Ms. Carl's family history includes a maternal grandmother with lung and/or pancreatic cancer, and a maternal grandfather with stomach or esophageal cancer. You would agree with me that neither of those cancers likely contributed to Ms. Carl's ovarian cancer; correct?

A. I do agree with you.

Q. To state it another way, neither of those cancers of her relatives increase her risk of getting ovarian cancer; correct?

A. Correct.

Q. You state her medical history is significant for nulliparity, infertility, pelvic

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endometriosis and obesity. Would you agree with me that none of those medical findings likely contributed to her serous borderline tumor?

A. I don't agree with you. So parity influences ovarian cancer.

Q. Okay. So the fact that she had no children put her at a higher risk of this borderline tumor.

A. At a slightly higher risk, yes.

Q. And do you know what that relative higher risk is?

A. Not off the top of my head.

Q. Would you agree that infertility, pelvic endometriosis, and obesity, did not likely contribute to her ovarian cancer?

A. Yes, I agree.

Q. The next sentence says, "Genetic counseling and testing to determine potential hereditary factors contributing to Ms. Carl's development of serous borderline tumor was recommended but not done." I couldn't find where that was recommended. Do you know who recommended that she get genetic testing?

A. One of her treating physicians.

Q. Because my understanding was her treating

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physician said because it was a borderline tumor, he wasn't going to recommend testing.
MR. HEGARTY: Objection to form.
THE WITNESS: Yeah, it was one of her treating clinicians.
BY MR. DEARING:
Q. You don't remember which one?
A. I don't.
Q. Okay. I couldn't tell from those cites which one. Anyway. As you sit here now, you don't know who made that recommendation?
A. I don't remember, no.
Q. The next section is your examination of the pathology slides section. And you state that, "My review of the slides reveals that Ms. Carl's tumor is a serous borderline tumor with micropapillary features and noninvasive desmoplastic and nondesmoplastic implants."
I have to admit, I have not seen that term before. What is desmoplastic and nondesmoplastic?
A. So desmoplasia is the reaction of the tissue around the implant. And it is a fibrous reaction. A lot of extracellular collagen. The importance of that is that invasion -- I'm

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sorry -- desmoplasia is something that occurs when some tumors invade.
Q. Okay.
A. Which is likely what made the treating pathologist believe that it was an invasive implant. But desmoplastic implants are well described in the literature, and there are morphologic features that separate it from invasive implants.
Q. Are desmoplastic and nondesmoplastic findings related to inflammation at all?
A. No.
Q. You state she had non-invasive desmoplastic implants, and that her tumor was disseminated at the time of the surgery. Are these observations made from your review of slides or review of the path report, or both?
A. They are strictly made from my review of the slides.
Q. The end of the first full paragraph on page 5 is a statement that you actually say in all of these reports. It says, "As expected, such particles are rarely encountered in some of Ms. Carl's pathology slides, but these particles are not confirmed to be talc and are not

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demonstrably in the plane of or associated with tissue, and uniformly lack the expected tissue reaction that would corroborate a true foreign body exposure."
You say, "As expected such particles are rarely encountered in some of Ms. Carl's pathology slides." For some reason that statement doesn't make sense to me. Can you explain that? Are you saying it is rarely encountered?
A. That means that there's not a lot of them.
Q. Okay. Well, if talc is ubiquitous in the tissue processing -- I'm sorry. If talc is ubiquitous in the labs and in tissue processing, wouldn't you expect to see talc on every histological slide?
A. You pretty much see them on most histological slides when you look for them.
Q. So that's not really rarely encountered. That's frequently encountered; right?
A. Well, it's rarely encountered on a single slide.
Q. Meaning?
A. There's not a lot of particles per slides.

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Q. Okay. Meaning only a few particles per slide?
A. Correct.
Q. But you would likely find them on almost every slide, is what you're saying?
A. Correct.
Q. Okay. Just didn't understand that part there.
In the first footnote on page 5 you mention the pleurodesis. You say, "This property of talc is why it has been used for decades to obliterate the pleural space in patients with recurrent pleural effusions."
Would you agree with me that pharmaceutical grade talc is what's used in talc pleurodesis procedures?
A. I believe so, yes.
Q. Or medical grade?
A. I believe so.
Q. And do you understand that there's a difference between pharmaceutical or medical grade talc and cosmetic grade talc?
A. Yes.
MR. HEGARTY: Objection to form.
THE WITNESS: There are differences

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between the two.
BY MR. DEARING:
Q. One of those differences would be the size of the talc particles; right?
A. Yes, the mean size of pharmaceutical grade talc is larger than the mean size of cosmetic talc, but there's overlap.
Q. Exactly. And the reason you want to use larger talc particles in talc pleurodesis is you're trying to invoke that inflammatory reaction that includes the granulomas and the giant cells, right, to fill the pleural space. So the larger the talc, the more of the inflammatory -- or the greater the inflammatory response; correct?
MR. HEGARTY: Objection to form.
THE WITNESS: I'm not certain that that is correct, because cosmetic talc does elicit a foreign body reaction, including granulomatous inflammation.
BY MR. DEARING:
Q. But you know cosmetic talc also elicits a lesser inflammatory reaction like a macrophage reaction; right?
MR. HEGARTY: Objection to form.
THE WITNESS: Yes. So the cosmetic talc

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ranges in size from slightly over a micron to up to 30 microns. Anything under five will more likely be phagocytized by a macrophage. Anything over five will form a granulomatous reaction.
BY MR. DEARING:
Q. Okay. Of course presumably, medical grade talc or pharmaceutical grade talc doesn't contain asbestos; right?
MR. HEGARTY: Objection to form.
THE WITNESS: Does not contain significant amount of asbestos; correct.
BY MR. DEARING:
Q. And would you describe the inflammatory reaction in the pleurodesis procedure as an acute reaction as opposed to a chronic reaction or acute inflammation versus chronic inflammation?
A. No, it does not cause acute inflammation.
Q. Okay. How would you describe the inflammation it causes?
A. It causes foreign body granulomatous reaction.
Q. Is it an ongoing reaction, or once the pleural spaces are filled -- well, let me ask you. Does the degree of reaction depend on the amount of talc injected into the -- or the talc slurry

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injected into the space?
A. Yes, it would. Obviously there's enough talc to obliterate the entire pleural space, so it's -- if there -- if you just put in a couple of droplets, it wouldn't obliterate the space.
Q. And my point of asking is once the space is obliterated, the inflammation curtails; right?
A. No, the inflammation remains static, and it remains static for pretty much the lifetime of the patient.
Q. And most of those patients that get the pleurodesis procedure are already in end stage of disease; right?
MR. HEGARTY: Objection to form.
THE WITNESS: That's -- that is -- I don't have the statistics, but a very common reason to perform pleurodesis are pulmonary blebs from patients with emphysema. And those patients are not end stage at all. And there's publications with follow-up of over 20 years on some of these patients.
BY MR. DEARING:
Q. Well, some of them aren't. But would you agree most of the patients that undergo pleurodesis are end stage disease?

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MR. HEGARTY: Objection to form.
THE WITNESS: I don't know the answer to that question. I don't know how many are for -- for malignant infusions versus how many are for pulmonary blebs.
BY MR. DEARING:
Q. Since your specialty is gynecologic pathology, do you have a lot of personal experience with pleurodesis in pulmonary pathology?
A. I've ran -- I've run into, it's either three or four cases in which I performed an autopsy on a patient who had undergone pleurodesis.
Q. And that -- that experience with those three or four patients, is that what you're relying on for your opinions about the -- whether the inflammatory reaction is acute or chronic or -- or granulomatous?
MR. HEGARTY: Objection to form.
THE WITNESS: So I rely on the literature as well. The literature -- nowhere in the literature does it state that you get acute inflammation when you -- when you expose body tissues to talc. And the literature does state that when granulomas are seen many years after the formation of -- of the granulomatous reaction

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which --
BY MR. DEARING:
Q. But I'm referring to pleurodesis right now.
A. Yes.
Q. Okay.
A. So both the literature and my experience is that the granulomas are long term.
Q. Isn't it true that most patients who undergo talc pleurodesis already have some type of cancer?
MR. HEGARTY: Objection, asked and answered.
BY MR. DEARING:
Q. No, I said end stage disease before. This is a little different.
A. So I -- anybody who has a malignant infusion is close -- very close to being end stage.
But to answer that question, again, I don't know the percentage of cases that undergo talc pleurodesis who are malignant. It could be more than 50 percent. It could be less than 50 percent. I just don't know.
Q. Okay. Incidentally, while we're talking about particle sizes, surgical gloves were dusted

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with industrial grade talc; right?
A. I don't know.
MR. HEGARTY: Objection.
THE WITNESS: I don't know the answer to that question.
BY MR. DEARING:
Q. Okay. At the bottom of page 6 of this report you state that the talc use and ovarian cancer might be coincidental. And you say, for example, if the precursor lesions of ovarian cancer caused perineal itching, women might use talc in an attempt to soothe the discomfort.
What precursor lesions to ovarian cancer might cause itching? What are you talking about?
A. The earlier forms of -- of cell change that don't acquire the final mutation that causes it to be cancer.
Q. That causes itching sometimes?
A. It is clearly speculative here.
Q. Okay.
A. I'm just saying as an example, a hypothetical.
Q. I didn't know if that was something that you encountered in your practice.

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A. No.
Q. That's why I was asking.
A. No.
Q. I'm sorry that wasn't very clear. So this hypothetical of perineal itching as a precursor that leads to ovarian cancer, that's not anything you've actually experienced in your clinical practice; right?
A. Correct. It's a hypothetical.
Q. At the top of page 7, you mention Dr. Wolf and her opinions.
A. Yes.
Q. And you state, "When evaluating cohort studies, there is no association between talc use and the development of ovarian cancer." And you cite O'Brien 2020.
Would your opinions about talc and ovarian cancer be different if there was a cohort study that showed an association between talc use and development of ovarian cancer?
A. No.
MR. HEGARTY: Objection to form. Calls for speculation.
BY MR. DEARING:
Q. So your opinions about talc and ovarian

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cancer are independent of the epidemiology studies; right?
MR. HEGARTY: Objection to form.
THE WITNESS: Correct.
BY MR. DEARING:
Q. Further down in that paragraph you state, "The absence of foreign body responses to tens of thousands of ovaries examined by me and numerous other gynecologic pathologist colleagues, despite the common use of perineal talc, is evidence that perineal talc does not reach the ovaries in any clinically significant quantity." What do you mean by "clinically significant quantity"?
A. A quantity that would cause a reaction of the body to it.
Q. Okay. So you don't seem to be saying that perineal talc application cannot reach the ovaries at all. You're saying it cannot reach the ovaries in any clinically significant quantity; right?
MR. HEGARTY: Objection, form.
BY MR. DEARING:
Q. In other words, are you saying some particles might get there?
A. Anything is possible. If it -- if any

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particle of talc gets there, it doesn't do anything.
Q. Okay. You state in the next paragraph, where you are discussing Dr. Godleski's findings, you state, in the next to the last sentence in that paragraph that it's important to note that the particle, which is at least 350 microns in its largest dimension, is not contained within a macrophage. Is that a typo, or did you mean to say 350 microns?
A. No, that's not a typo.
Q. Okay. Well, you wouldn't expect to find a 350 micron particle in a macrophage, would you?
A. You would not. But then I go on in that sentence to say that -- or otherwise associated with a foreign body reaction.
Q. You've stated in this report and in previous testimony that talc found by Dr. Godleski is most likely contamination that occurs during the tissue process -- tissue paraffination -- paraf -- am I saying that right?
A. Just say processing.
Q. When tissue is being processed. That was a horrible -- I'm going to start that over.
You've stated in your report, you've

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testified that the talc found by Dr. Godleski is most likely to be the product of lab contamination that occurred during tissue processing.
Part of that process is the tissue being dehydrated and then paraffinized. How does talc infiltrate that process? In other words, where does the talc contamination occur during that process that would result in talc actually being in the corpus of the tissue?
A. Sure. So when -- when the tissue is dehydrated with serial dilutions of alcohol, and then the alcohol is removed by using an organic solvent, xylene, the membranes of the cells become permeable and allow the passage of paraffin. We know that paraffin is contaminated with particles. Commercial paraffin contains numerous particles, including talc.
Q. Is that published somewhere? I mean, how do you know that?
A. It's in the product inserts.
Q. Okay.
A. So when the tissue goes from xylene to xylene plus paraffin, you basically can permeate the entire thing with particles.
Q. Okay. One of the things you provided

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with your reports is your litigation history over the preceding four years. And would you say that those four years would be consistent with the average of years that you've testified over the past 20 years?
A. It's changed somewhat.
Q. How about just in the past twelve years, are you -- is your annual litigation work about the same?
A. Very similar, yes.
Q. With an exception for the COVID year but -- okay.
(Exhibit 4 marked for identification.)
BY MR. DEARING:
Q. I'm showing you what I'm marking as Exhibit Number 4, which are the invoices that I received pertaining to Ms. Carl's case.
And do these accurately reflect the amount of time and income you have received from your work on the Carl case as best as you and your wife can recall?
A. Yes, up to February of 2024.
Q. Okay. Does any of the income you earned in this litigation go to the Medical College of Wisconsin?

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A. No.
Q. Does it go to anyone other than you?
A. Well, I have a corporation.
Q. Okay.
A. And it would -- with which I pay employees.
Q. Okay. I'm not aware of that. Can you tell me about that? What's the name of your corporation?
A. It's called Women's Pathology Services, LLC.
Q. What is the business of that corporation?
A. It is -- it handles all of my medicolegal work as well as pharmaceutical trials. I think that's basically it.
Q. So the income derived from litigation goes -- is paid to the corporation. And then does the corporation pay you a salary, or how does that work?
A. Correct, yes, it does. I take it as income.
Q. Okay. Is your wife an employee of the corporation?
A. Yes.
Q. Do you have other employees?

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A. My daughters work -- work for me sometimes.
Q. Are they pathologists?
A. No.
Q. What kind of work do they do for you?
A. They -- they will sometimes summarize records for me. One of my daughters is a nurse. She's very adept at going through medical records.
Q. Did your daughters do any work in these seven cases?
A. I don't think so. Most of the work that they do is on birth injury.
Q. How much do you think Johnson & Johnson or their lawyers have paid you for your litigation work since you started twelve or so years ago?
A. It's possibly in the neighborhood of getting close to a million dollars.
Q. And any idea about how much of outstanding work exists that you haven't been paid for? In other words, about how much do they owe you now that you haven't invoiced for?
A. Oh, I have no idea. Yeah, I --
Q. I assume you plan to invoice them for the work in these seven cases that you haven't billed them for yet?

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A. Yes, I do plan on doing that.
MR. DEARING: Mark, I would just request that we get provided with those invoices should they ever be made.
MR. HEGARTY: We will provide those invoices.
THE WITNESS: While you look, I'm going to take a couple minutes' break to run to the restroom.
MR. HEGARTY: Let's go off the record.
(Break taken.)
BY MR. DEARING:
Q. So the last question I wanted to ask you about Carl is whether you have copies of any chain of custody documents related to the slides. I don't, or I'd show them to you. I don't know that any exist. I'm just asking.
A. I'm pretty sure they do exist.
Q. Okay.
A. I don't have them with me.
Q. That was one of the things we asked to be produced in the notice of deposition, so I would ask that they get produced if they -- if you have them. I don't have any.
MR. HEGARTY: You're talking about any

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chain of custody documents, copies of which that Dr. Felix still has?
MR. DEARING: Yes, if he made copies of any them, or if you guys have them. I don't know if there is one even. But if there is one, I'd like to see a copy of it. I don't know who's actually maintaining it.
MR. HEGARTY: We'll follow up on that.
MR. DEARING: Okay. I know sometimes we don't have chain of custody forms. And maybe we don't in this one, 'cause it was a long time ago.
BY MR. DEARING:
Q. In the -- in your CV, at the end of your CV -- I mentioned I was going to ask you about the case control study of ovarian cancer that you worked on. It shows the dates of 1993. It's in your grants section.
A. My what?
Q. Research grants that you received. You identify a case control study of ovarian cancer. My pages to your CV aren't numbered, but it's sort of right in the middle. Anyway, you received $1.5 million, looks like, from the NCI. Do you see what I'm referring to?
A. Yeah, I was just co-investigator on that.

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I did not receive a million and a half.
Q. So what was that case control study about? That's really my question.
A. I believe it was about borderline tumors. Jesus, it was so long ago.
Q. Do you know if it was ever published, any results were ever published?
A. I'm sure there were some results published. My role was in -- basically doing a -- if memory serves me, is doing a validation of diagnoses on a -- I believe ten percent of the cases they were able to retrieve.
Q. Okay.
A. Just to confirm the histology.
Q. Moving to the next case, Diana Balderrama. First let me ask you: Does your report contain all of your opinions that you intend to offer in this case?
A. Yes.
Q. Are there any materials not listed on your reference list that you're relying on for your opinions in this case?
A. No.
Q. And in your opinion, was Ms. Balderrama's cancer properly diagnosed by her treating

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pathologist?
A. Kind of.
Q. Can you explain that?
A. So the treating pathologist diagnosed her endometrial cancer, and the treating pathologist diagnosed her ovarian cancer, and then was noncommittal as to whether it was a single tumor versus synchronous primaries. And so it is my opinion that that is highly likely that this is a metastatic endometrial cancer for a variety of reasons.
Q. When you say the pathologist was noncommittal, they did ultimately opine that these were synchronous tumors; right?
A. I -- let me find the report. Yeah, I don't think that the pathologist -- I don't think she definitively diagnosed it as synchronous. She said the lack of ovarian endometriosis would favor secondary involvement from an endometrial tumor, while the overall size of the ovarian neoplasm and unilateral involvement of the ovary would suggest a primary independent ovarian neoplasm. So she's noncommittal.
Q. In the microscopic description section of the pathology report, she goes through section A

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and describes the right fallopian tube and ovary with an endometrioid adenocarcinoma. And then she, in section B, describing the uterus and endometrium, she refers to an endometrioid adenocarcinoma. And below that she writes synchronous neoplasm, and she describes the acidic fluid and other things.
A. I'm sorry, what page is that?
Q. Well, the same page you were just reading from. Hold on. And then at the bottom -- so this is where you were just reading from. If you go down to the bottom, there's A and B. And the next page is where B continues.
A. My report is formatted differently than yours.
Q. Okay.
A. May I see?
Q. Sure. Let me mark this one as an exhibit, and I'll give you this one.
(Exhibit 5 marked for identification.)
BY MR. DEARING:
Q. So I'm marking as Exhibit 5 the Providence Holy Cross Medical Center pathology report, which has a Bates stamp on it of DBalderramaPL-PHCMC-000183.

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A. Okay.
Q. And you can see where she's writing in the section B of the microscopic description and diagnosis, she makes reference to synchronous neoplasm. So isn't she committing, by doing that, to say that these are most likely synchronous tumors?
A. I mean, in one part of her report she says she can't be sure, and --
Q. Right. Do you recall seeing in other parts of the medical records where the treating surgeon opined that these were synchronous tumors?
A. I do recall reading that, several people who referred to it as synchronous, yes.
Q. So is it your opinion that they just -- they got it wrong?
A. Yes. It is not -- if you read the latest treaties on this, there is -- there is no certainty as to the -- as to the classification of synchronous versus metastatic. There are criteria that, when fulfilled, lead you to say one versus the other. The criteria include to have it synchronous, it must be less than half mononucleal invasion.
Q. Isn't this right on that?

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A. Dr. Sampson diagnoses it as outer half greater than 50 percent. Then she -- the other criteria is that it's not -- it's stage -- it can't be disseminated or have involvement of other organs. Her cervix is involved, so that would make her a stage two endometrial cancer. And because of those two reasons, I would classify it as a metastatic endometrial cancer of the ovary.
Q. Isn't the degree of invasion sort of right on the dividing line? In other words --
A. It's greater than 50 percent. So these are not -- these are not optional criteria. These are -- FIGO defines it as 50.0001 percent invasion is outer half.
Q. Okay.
A. Okay? So it's -- it's sort of like a 501, two, or three. You can't say 501 to two.
Q. Is it fair to say that the hospital pathologist interpreted the degree of invasion different than you did?
A. No, her degree of invasion is 1.2 out of 2.2, greater than 50 percent. That would be on the same place where she calls it synchronous.
Q. Okay. Let me ask you about endometrial carcinomas. Type one, the distinction between

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endometrial carcinomas between type one and type two occurs in order to distinguish which tumors are influenced by hormones; right? In other words, type ones are typically influenced by hormones, type twos are not?

MR. HEGARTY: Objection to form.

THE WITNESS: Right.

BY MR. DEARING:

Q. And type one endometrial carcinomas, which would include endometrioid carcinomas, are thought to be influenced by estrogen and other hormones; right?

A. Correct.

Q. And first let me ask you: It's my understanding that that may be somewhat of an antiquated distinction or maybe even a distinction without as much relevance now as it was when it first came out. Do you agree with that suggestion?

A. No.

Q. Okay. Good. Are endometrioid ovarian cancers susceptible to hormones the way endometrial -- endometrioid endometrial cancers are?

A. Less well proven, but likely.

Q. Serous endometrial cancers are type two;

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correct?

A. Correct.

Q. In other words, they're not thought to be very influenced by hormones; correct?

A. Correct.

Q. I'll follow up with that in a minute. So it's your opinion in Balderrama that she doesn't have an ovarian cancer at all, she just has a metastasized endometrial cancer that metastasized to the ovary?

A. That's correct.

Q. And your support for that conclusion is the criteria that you just went through a minute ago?

A. Yes.

Q. She was diagnosed at age 37. Would you agree with me that that's 20 years or so younger than the mean age of a woman diagnosed with endometrioid carcinomas --

A. Yes.

Q. -- of the ovary?

A. Yes.

Q. Okay. Is there a mean age of women diagnosed with endometrioid endometrial carcinomas?

A. Yes. It's also -- it's also in the 50s.

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Q. You stated that her Ms. Balderrama's medical history is significant for obesity, infertility, probable polycystic ovarian syndrome, left salpingectomy due to ectopic pregnancy, and five hysteroscopies with endometrial biopsy. Does any of her medical history as it's described there increase her risk of getting endometrioid ovarian carcinoma, even though I know you're saying that's not what she has. I guess we can break that down.

Do you think obesity is a risk factor for endometrioid ovarian cancer?

A. Not to my awareness.

Q. What about infertility? Is infertility a risk factor for endometrioid adenocarcinoma cancer of the ovary?

A. I don't think so, so.

Q. What about polycystic ovarian syndrome?

A. It is not.

Q. Do you believe that obesity is a risk factor for endometrial -- endometrioid endometrial carcinoma?

A. Yes.

Q. And is that because obese woman have excess estrogen, typically?

A. Yes.

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Q. Because estrogen of being stored in the fat cells and that kind of thing.

A. Yeah, so -- yes.

Q. And I'm simplifying that --

A. Yes, you are.

Q. -- much more than it probably is, but...

What about those other medical findings, the infertility, polycystic ovarian syndrome, did those increase her risk of endometrial cancer?

A. Yes.

Q. All of them? Well, infertility did.

A. Well, because a significant percentage of infertility people have polycystic ovary disease or are obese, the association is present with infertility.

Q. So the infertility may be attributed to those other things which make it a risk factor for uterine cancer.

A. You are correct. Which is the bugger about associations.

Q. You talk about her family history here, that she has a maternal aunt with possible uterine cancer, and a maternal great aunt or great grandmother with breast cancer. Neither of those

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two family member cancers increased her risk of ovarian cancer, did they?
A. No.
Q. And you state that she had no genetic testing; right?
A. Correct.
Q. If she had a full panel of genetic testing which proved to be negative, would that influence your opinion about her condition at all?
A. No.
Q. You just described the criteria that's used in your opinion to determine whether this ovarian tumor is truly an ovarian cancer or whether it's metastasis from the uterus. Were there any other observations or considerations that you recognized or identified that led to that conclusion, or are you basing it solely on the criteria that you described?
MR. HEGARTY: Objection to form.
THE WITNESS: I am basing it on the criteria. It is now well established that whether the tumors -- synchronous tumors of the uterus and ovary, although they behave in two different ways, the molecular biology of these tumors show that they're all endometrial metastasis.

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BY MR. DEARING:
Q. So are you saying it's not possible at all that her endometrial tumor could be an ovarian metastasis?
A. Correct.
Q. Does that just never happen? Why --
A. It just -- yeah, it -- it just doesn't happen.
Q. Okay. Do you have any opinions about how she developed metastatic tumor on her ovary from the endometrium?
A. Sure. There's several roots for it. One of them is direct spread through the fallopian tubes.
Q. The same way endometriosis would spread?
A. Correct. And then the other would be through lymphatics.
Q. Would you agree with me that there is no evidence of metastasis anywhere else in her tissue?
A. To the cervix.
Q. Oh, there was metastasis to the cervix?
A. Yes.
Q. Did you look at those slides --
A. Yes.
Q. -- specifically? You also say that other

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findings include a focus of endometriosis in the left ovary that was not originally detected. If your opinion is that this was a metastasis of the endometrium, the endometriosis did not contribute to cause that cancer; correct?
A. Correct.
Q. I don't know how clear that question was. Let me ask a simpler way. Is it your opinion that her endometriosis -- strike that.
Did Ms. Balderrama's endometriosis contribute to cause her cancer?
A. No.
Q. Thank you. Should have started with that one. I'm getting tired already.
In preparing your report or reaching these opinions, did you read any other expert reports, defense expert reports?
A. No.
MR. HEGARTY: On that point, David, we didn't provide Dr. Felix with Dr. Cramer's reports, and he's not had a chance yet to read through those. And we anticipate that he would -- he will comment on Dr. Cramer's reports as he's commented on Dr. Wolf and Dr. Clarke-Pearson's reports via supplemental report.

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And obviously, to the extent that we do that and you need some time to ask Dr. Felix about his review of that -- Dr. Cramer's reports in this case and what he wrote, then we will, I'm sure, come to an accommodation about that.
MR. DEARING: Okay. Thank you.
MR. HEGARTY: So, yeah, we have provided to Dr. Felix Dr. Cramer's report.
THE WITNESS: I think he said defense.
MR. DEARING: I did say defense, but I was going to ask plaintiff.
MR. HEGARTY: You're right. I jumped the gun.
MR. DEARING: That's okay.
BY MR. DEARING:
Q. And with regard to plaintiff expert reports, you've read Dr. Godleski's report; right?
A. Correct.
Q. And you've not had a chance to read Dr. Cramer's report but you intend to?
A. Yes.
Q. You state in this middle paragraph on page 5, "Within the last ten years, molecular genetic data have accumulated to support the current understanding that the vast majority of

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these synchronous primary tumors are clonal in nature and represent metastatic endometrial cancer."

Isn't it true that you can't definitively establish clonal cells without doing clonal testing?

A. That's what they did.

Q. Right. But that wasn't done in this case --

A. Oh, no, not in this case.

Q. -- in Balderrama.

A. I'm sorry. Yes.

Q. You state that these metastatic endometrial tumors behave clinically like low-stage neoplasms and carry a better prognosis than typical stage 3A metastatic uterine carcinomas. Then you say, "This may be due to restricted dissemination of tumor cells through fallopian tubes rather than metastasis through myometrial or lymphovascular invasion." Can you just explain that sentence for me? What is restricting dissemination through fallopian tubes?

A. I'm sorry, I didn't -- I hope I didn't say that. No. What I'm saying in that sentence is that the different behavior, meaning if they're all

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metastatic because of clonal determinations, all of them are clonal, then why do they behave differently. And the reason these authors postulated was that it was probably because the tumor cells went to the ovary through the fallopian tube rather than metastases through lymphatic or hematogenous spread. So that may explain why these tumors behaved better than stage three endometrial cancer.

Q. How is the method by which they got there make any difference in how they behave or respond?

A. Because dissemination to lymph nodes and other organs occurs in -- with endometrial cancer occurs almost exclusively by lymphatics. If the tumor has not learned how to get into lymphatics, then it will not metastasize. But if it does go into the ovary through the fallopian tube, it didn't need to learn how to metastasize yet.

Q. Well, obviously those tumor cells don't have a means of motility, so are they swept up into the fallopian tube the same way through retrograde menstruation, or how do they get there?

A. Correct, through retrograde menstruation.

Q. Okay.

A. By the way, tumor cells are motile.

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Q. Really?

A. Yeah.

Q. How do they move?

A. Through -- through cell membrane undulations. There's actually assays that you can do to test for that.

Q. Okay. I learn something every deposition.

A. Me too.

Q. To be clear, is it your opinion that the endometrial cancer metastasized to the ovary through the fallopian tubes, or do we not know?

A. I do not know. In this case I know that I did not find lymph vascular space involved in the tumor. So possibly, but I -- you don't need to detect lymph -- sorry. You can have cases in which you cannot see lymph vascular space involvement in the uterus where metastases to lymph nodes and other organs are present.

Q. Are you able to opine one way or the other which method of transport was most likely given the facts of this case?

A. I cannot.

Q. In your general section entitled talc and ovarian cancer on page 7, the first sentence of

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that section states that while some retrospective case control studies have suggested a weak association between perineal talc exposure and ovarian cancers, others have not.

And my question is just in the world of epidemiology, weak is sort of a term of art. What -- what relative risk or hazard ratios are you considering weak?

A. Under two.

Q. Anything under two is weak?

A. Yes.

Q. And then anything over two, would that be moderate or strong or --

MR. HEGARTY: Object to form.

THE WITNESS: Yeah, moderate or indeterminate.

BY MR. DEARING:

Q. Okay. So in your opinion any relative risk under two is weak?

A. Yes.

Q. Okay. Have you done any of the research involving endocrine disrupting chemicals and their association with uterine cancers?

A. No. I don't even know what an endocrine disrupting chemical is.

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Q. Okay. In the next section on page 9 is where you start responses to plaintiff experts. And this section really is just in response to Dr. Godleski's findings.

In most and possibly all of these reports you make the statement that none of this birefringent material was subjected to SEM EDS analysis to determine if it is compositionally consistent with talc or if, more likely, it is consistent with the 477 non-talc particles identified by SEM EDS in Ms. Balderrama's two pathology specimens.

If talc is ubiquitous, why is it more likely that those particles, those birefringent particles, are not talc?

A. Okay, so you've used that term several times, ubiquitous.

Q. Right.

A. What -- what are you -- what are you intending to mean by that?

Q. Let me just ask it more generally. Why is it more likely -- why are you using the phrase "more likely" there to describe that the birefringent particles are more likely the non-talc particles versus talc?

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A. By Dr. Godleski's own data. His -- his -- he discovered more non-talc particles than talc particles.

Q. Did you look at his data to read what those non-talc particles were?

A. I don't think he discloses that in his report.

Q. I don't know if it's in his report. It's usually in his data, though, that we send with the report, the data files.

So -- well, let me ask you. When you were provided Dr. Godleski's report, were you also provided the Dropbox link that had all of his data files in it?

A. I don't believe so.

Q. Okay. Would that be true of all these cases?

A. I know that I received additional images, but I don't think I saw raw data.

Q. Okay. Like SEM spectra, you don't think you've looked at those?

A. Only the ones in his report.

Q. Okay. Well, I was going to ask you whether examples of those other 40 -- 477 non-talc particles are things that you would typically find

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in a pathology lab that would contaminate tissue the way you say talc is a contaminant. But without knowing what those particles are, I guess you can't answer that question.

A. I can't.

Q. So logistically, or just practically speaking, when Johnson & Johnson's attorneys provide you with Dr. Godleski's report, do they -- are they not also providing you all of the data points that -- that were provided to them? In other words, do you just get that report e-mailed to you, or how does that work?

A. Yeah, I don't remember whether it was in a Box file or whether it was sent to me by e-mail. I just don't remember. Likely in a Box file, it's been their habit and custom.

Q. A box file. You mean Dropbox, or are you talking about a hard copy?

A. Well, there's Dropbox and Box. They're similar file sharing.

Q. But you're talking about electronic transmission --

A. Yes.

Q. -- not hard copies. Okay. Do you have any way of opining whether those 477 non-talc

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particles are lab contaminants?

A. They would have to be because there is no foreign body reaction to them.

Q. Well --

A. So the -- so they can't be -- have been particles acquired by the patient while the ovary was vital, meaning not removed.

Q. So presumably we're talking about exogenous materials here as these contaminants, exogenous meaning they're not naturally occurring inside the body?

A. Correct.

Q. Would you agree with me that there are endogenous materials that would evoke an inflammatory reaction like macrophages? And we mentioned one of them already, dead cancer cells.

A. Yes.

Q. Calcium, for example, may elicit an inflammatory reaction; right?

A. Most calcium deposits do not elicit an inflammatory reaction.

Q. Okay. What about the presence of iron, would iron in an adequate quantity elicit an inflammatory response?

A. Some forms of iron would, yes. And he

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does provide some -- some information about that in his report. He says a total of 486 particles were found, and analyzed tissues may have carbonaceous material detected in backscatter electron microscopy mode.

Q. Right. Most of the carbon he's referring to is endogenous; right?

MR. HEGARTY: Objection to form.

BY MR. DEARING:

Q. I mean, tissue is made up mostly of carbon, isn't it?

A. Not -- not elemental carbon, though.

Q. Okay.

A. Dr. Godleski's making assumptions in that paragraph.

Q. Which paragraph?

A. The one that I was reading from.

Q. What do you mean? Can you just tell me what --

A. Sure. He says the fact that calcification is frequently found in ovarian cancer and often readily seen by line microscopy supports the likelihood of many particles having that composition. I mean, the calcification seen in ovarian cancer are -- are not refringent.

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Q. Okay. I thought he was talking about SEM. Particles identified by SEM, not birefringent particles.

A. Well, the ones that he's -- does SEM on are refringent.

Q. Can you see refringence in SEM?

A. No.

Q. Okay. So he's identifying particles with SEM, but he's not commenting on their refringent properties; right?

MR. HEGARTY: Objection to form.

THE WITNESS: He does both. He comments on the refringence on the H&E, and then he comments on the composition by SEM.

BY MR. DEARING:

Q. Right. But the particles he's identifying as calcium he's identifying by SEM, which are not birefringent and not polarized; right?

A. Well, he says carbonaceous, not carbon; right? Yes.

Q. Well, I thought you were talking about calcium. Okay, let me move on.

Would you agree that microscopists' ability to see and evaluate the depth and

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orientation and cellular contents is better when you're actually looking into the micrograph -- I mean looking into the microscope as opposed to when you're looking at a two-dimensional micrograph?

A. Yes.

Q. At the bottom of page 9 in that paragraph you state, "Dr. Godleski uses SEM to determine the relative chemical composition of particulate material on the surface of the processed tissue specimens."

And I've already suggested to you that's not what he's doing, that he's using pressure -- variable pressure SEM to look below the surface. Then you say, "His SEM images do not provide enough detail to identify the nature of the cells present in any of the particulate matter -- particulate material being analyzed."

Would you agree that looking directly at the SEM images as they occur in the instrument will give you a more detailed and better vantage point than looking at two-dimensional photographs?

MR. HEGARTY: Objection to form.

THE WITNESS: I don't know.

BY MR. DEARING:

Q. We did not receive any invoices

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associated with the Balderrama case. This case has been pending for many years. Have you invoiced the lawyers for Johnson & Johnson at all in this case yet?

A. Not to the best of my knowledge, no.

Q. Do you know when you first started working on this Balderrama report?

A. I don't recall.

Q. Would it have been in the last two years, or did you start on it eight years ago or so when we first started litigating Balderrama?

A. Was this part of the MDL group?

Q. Nope.

A. No.

Q. This is a New Jersey state court?

MR. HEGARTY: You don't need to look anything up right now, but --

THE WITNESS: Yeah, I don't recall.

BY MR. DEARING:

Q. Do you recall whether you participated in a Kemp hearing, which is a -- like a Daubert hearing in New Jersey, in Atlantic City?

A. No, I did not.

Q. So as you sit here now, to your knowledge, you've never created any invoices in the

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Balderrama case?
A. Correct.
Q. Did the lawyers for Johnson & Johnson send you the tissue blocks associated with Ms. Balderrama's case?
A. They did not.
Q. Did you request to see them?
A. I did not.
Q. Did you maintain any copies of the chain of custody paperwork that traveled with the slides?
A. I don't remember.
Q. Okay. Moving on to Ms. Rausa. And for your reference, the rest of these cases are in the MDL.
A. Okay. Thank you.
Q. The first two were in New Jersey state court.
So first, does your report contain all of your opinions that you intend to offer in this case?
A. Yes.
Q. Are there any materials not listed on your reference list that you're relying on for your opinions in this matter?
A. No.

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Q. And what did Johnson & Johnson's lawyers ask you to do in this case?
A. They asked me to examine the pathology for -- to determine tumor type, stage, and whether there was any evidence that talc may have contributed to the genesis of the neoplasm.
Q. In your opinion, was Ms. Rausa's cancer properly diagnosed by her treating pathologist?
A. I'll take one second here, please. Yes, they did.
Q. And do you disagree with any of the statements and opinions of Ms. Rausa's treating pathologist?
A. I did not.
Q. I should ask that more broadly. Do you disagree with any of the statements or opinions of any Ms. Rausa's treating physicians?
A. Not that I can recollect.
Q. In her clinical history, you state that she was diagnosed with stage 3A2 high-grade serous carcinoma of her right and left ovaries. Is that your understanding of her diagnosis? In other words, do you agree with that diagnosis?
A. Yes.
Q. Okay. Later in that same paragraph you

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state that genetic panel testing did not identify known pathogenic germline mutations, though she was found to have a variant of uncertain significance.
Would you agree that nothing in her panel testing or tumor testing showed that she has a genetic mutation or any other finding known to increase her risk of ovarian cancer?
A. Correct.
Q. You state that her family history is unremarkable for cancer. Is it a fair statement to say that there's nothing in her family history that, as far as you know, would have increased her risk of ovarian cancer?
A. That is correct.
Q. To your knowledge, does she have any co-morbidities or other health conditions that may have increased her risk of getting high-grade serous carcinoma?
A. No.
Q. You make this recurring sentence in your reports on page 5, second paragraph, about three or four sentences in, you say, "In the absence of an associated foreign body reaction, including the presence of foreign body giant cells and/or particle-laden macrophages, foreign materials in

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processed histology specimens is widely agreed by pathologists to be simple particulate contaminant introduced into the tissue at the time of surgical removal and/or tissue processing for histologic examination."
When you say it's widely agreed, what source are you relying on for that, or is that just your personal experience?
A. Yes, it's my -- my conversation with many -- many, many pathology colleagues.
Q. Can you point to any publications that -- or sources -- that suggest that if talc is found in tissue where there's no evidence of foreign body reaction, it has to be contamination?
A. I have referenced articles in which the authors state that there must -- that talc elicits a foreign body reaction. So if you don't see a foreign body reaction, then it has to have gotten in the tissue after it was devitalized.
Q. You go on to say, "The only foreign particles identified within macrophages in Ms. Rausa's histology specimens were observed sequestered within the cytoplasm of macrophages in the left external iliac and periaortic lymph nodes." Was that an observation of her clinical

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pathologist?
A. You mean the pathologist at the hospital --
Q. Yes.
A. -- the treating? No, it was not.
Q. Okay. So that was -- was that an observation you made?
A. Yes.
Q. Where is the left external iliac and periaortic lymph nodes?
A. The external iliac artery vein in the lymphatic chain is the -- a branch of the aorta. It goes from common iliac to external iliac, which goes to perfuse the leg, and the internal iliac that goes to perfuse bladder, part of the rectum, and the genital organs. So it is in the external iliac would be the divergence of the common iliac to the artery that would go towards the leg.
Q. Okay. So does the pelvic -- does the pelvis drain into those lymphatic -- those lymph nodes?
A. Parts of the pelvis can. The external iliac usually associated with -- with vulva, vagina and cervix more than with uterus and ovary. Those would have more of a tendency to go to the internal

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iliac. They can also both go to the common iliac, and they can both go to the periaortic.
Q. Did you polarize those particles?
A. Yes.
Q. Were they birefringent?
A. Yes, they were refringent.
Q. Do you have an opinion about how they got there?
A. I have opinions on how they can get there. So they can get there through abrasions of the skin of the perineum, vulva. They can be particles that -- that were put there in the pelvis for some reason.
Q. Do you have an opinion about how these particular particles got there?
A. I have no certainty as to how they got there, no.
Q. On page 7 in the top paragraph where you're discussing Dr. Clarke-Pearson's opinions -- that's Clarke, C-L-A-R-K-E, hyphen P-E-A-R-S-O-N -- you reference the O'Brien 2020 study. And as I recall, that's a study that relied on the sister study data; right?
A. I believe so, yes.
Q. The sister study being a study of women

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whose sister was -- had a confirmed diagnosis of breast cancer; right?
A. Correct.
Q. And that's a pretty large database, isn't it?
A. It's not as large as the women's health initiative, but it's fairly large.
Q. I mean, since you cited that study in every report, do you believe that -- that that database that that study derives from is a -- is a good and reliable database?
MR. HEGARTY: Objection to form.
THE WITNESS: I think it's as good as it gets.
BY MR. DEARING:
Q. Okay. Do you think the authors with Dr. O'Brien -- do you think Dr. O'Brien and her co-authors are able to fully evaluate and interpret the data gathered from the sister study?
MR. HEGARTY: Objection to form. Calls for speculation.
THE WITNESS: Well, they did.
BY MR. DEARING:
Q. Right. But you think they did it well? I mean, you trust their opinions about it? 'Cause

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you cite to them.
A. Yes, I know one of those authors very well. He's a very responsible, careful person.
Q. Which one do you know?
A. Nico Winstonson.
Q. Winstonson. Okay. In the next one you state, "When evaluating the prospective cohort studies, there is no association between talc use and the development of ovarian cancer." I've already asked you that question.
In Ms. Rausa's case, those particles that you identified in macrophages were birefringent. Is it possible those are talc particles?
A. Anything is possible. They could be talc particles, sure.
Q. So when you say in the same paragraph, "I have not encountered talc foreign body reactions since surgeons stopped using talc and other powders," is that partly because you've never identified the particle itself that was associated with the reaction like the particle that was engulfed by a macrophage?
A. Because I didn't what?
Q. So you're saying --

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MR. HEGARTY: Object to form.
BY MR. DEARING:
Q. You write, "Despite the common use of perineal talc, I have not encountered talc foreign body reactions since surgeons stopped using talc and other powders as lubricants for surgical gloves."
But you testified in Ms. Rausa's case you did identify foreign particles that were birefringent in macrophages. But you say --
A. In the lymph node.
Q. In the lymph node.
A. So I was referring, but with that sentence, as to my examination of tens of thousands of ovaries.
Q. So in the tens of thousands of ovaries you've looked at, you've never seen a foreign particle sequestered by a macrophage, or you have, or a granuloma?
A. Not something that could be talc. I've seen it to -- I've seen it to suture material. I've seen it to teratomatous components. But not something that would be consistent with talc.
Q. Well, using a routine light microscope, the only thing you could say about the particle

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that was consistent with talc is that it might be birefringent if you polarized it; right?
A. Correct, but -- well, that it could -- yeah. And then it had the right appearance, right?
Q. So are you saying that you've never seen a foreign particle in the gynecologic tissue that was associated with a foreign body reaction?
A. No, I just said that I have, but not -- but not refringent particles that would be consistent with talc.
Q. Okay. But you would agree that you haven't polarized most of the slides you study; right?
A. I don't need to. Because if there's no reaction to it, then you wouldn't --
Q. Okay, we're -- I think we're talking in circles. I'm trying to clarify what your testimony is.
Are you saying that in your vast experience you have not observed a particle except for -- and I don't consider suture material a particle. I'm just talking about a -- for purposes of this question, it's a foreign particle, not suture material, not anything endogenous. Are you

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saying you've never encountered a foreign particle in gyn tissue associated with an inflammatory response to it or a foreign body reaction?
MR. HEGARTY: Objection to form.
THE WITNESS: Correct.
BY MR. DEARING:
Q. Okay. Well, at least not since surgeons stopped dusting their gloves with talc?
A. Correct.
Q. You state also in that same paragraph a little further down, "Cell culture studies of potential cancer-causing inflammatory mediators must be validated in animal models and humans before any causal assumptions can be made."
Animal models maybe, but you can't do a cell culture in a human where the potential outcome may be cancer; right? That's a nonstarter.
A. There's accidental exposures too. We've -- we have done many studies in humans that have been exposed to potentially carcinogenic materials that are acquired by the human by accidental exposure. So you don't need to do a prospective study exposing the human, but you can certainly evaluate humans who have been exposed.
Q. How could a woman have been accidentally

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exposed to talc such that it would be implanted in her -- on her ovary or fallopian tube?
A. I don't think --
MR. HEGARTY: Objection to form.
THE WITNESS: -- she can.
BY MR. DEARING:
Q. Right. So that's a human experiment that can never happen?
A. Correct.
Q. All right. So by that logic you're saying these cell culture studies can never be validated by human study?
A. Not after the exposure of the ovaries to dusted gloves.
Q. Okay. We requested -- as we've discussed -- in our notice of deposition that you provide invoices for this case. And we didn't receive any. Does that mean that no invoices have been created in this case?
A. That's correct.
Q. Do you know whether you retained a copy of the chain of custody forms that traveled with these slides? And I'll tell you with the MDL cases, there are chain of custody forms with all of them.

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A. I don't recall, but likely yes. And I did not bring them with me.
Q. Did you -- I'm sorry. Strike that.
Did the lawyers for Johnson & Johnson send you any of Ms. Rausa's tissue blocks?
A. They did not.
Q. Did you request any of her tissue blocks?
A. I did not.
Q. Do you have any opinions as to what caused Ms. Rausa's ovarian cancer?
A. Yes.
Q. What is that opinion?
A. I believe that Ms. Rausa's cancer is a sporadic ovarian -- high-grade serous ovarian cancer.
Q. By sporadic, do you mean it was caused by irregular replication of cells?
A. Mistake in the replication of cells.
Q. And is it your opinion that she has no risk factors for ovarian cancer?
A. Yes.
Q. Okay. Next case is Converse.
THE WITNESS: I'm going to take three minutes.
MR. DEARING: All right.

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(Break taken.)
BY MR. DEARING:
Q. Doctor, if you would now look at your Converse report.
A. Yes.
Q. Incidentally -- well, does your report contain all of your opinions you intend to offer in this case?
A. Yes.
Q. Are there any materials not listed on your reference list that you're relying on for your opinions in this matter?
A. No.
Q. And what exactly did Johnson & Johnson's lawyers ask you to do in this case?
A. I was asked to evaluate the pathology of Ms. Converse's ovarian tumor, classify it, stage it, and determine if any foreign material may have contributed to the genesis of her neoplasm.
Q. In your opinion, did Ms. Converse's -- was Ms. Converse's cancer properly diagnosed by her treating pathologist?
A. Yes, it was.
Q. Do you disagree with any of the statements or opinions of any of Ms. Converse's

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treating physicians, including her pathologist?
A. No, not that I recollect.
Q. Is the -- I'm sorry. Strike that. Is Ms. Converse's usage of Johnson's baby powder relevant to your opinions in this case?
A. It is not.
Q. Did you identify any risk factors for Ms. Converse that may have contributed to her ovarian cancer? Just specifically you say her family history includes breast cancer diagnosed in her mother at age 46, as well as in a paternal aunt in her 70s, and a paternal cousin in her 40s. And then pancreatic cancer in her maternal grandmother at age 87, non-Hodgkin's lymphoma diagnosed in a maternal uncle in his 70s, and lung cancer in her father in his 80s.
A. That's --
Q. Do any of those family histories place Ms. Converse at an increased risk of getting clear cell carcinoma of the ovary?
A. Well, her -- her -- her two factors that would increase the risk of ovarian cancer in her case would be the fact that she's an Ashkenazi Jew, and that her mother had breast cancer at age 46.
Q. Is her mother's breast cancer a risk

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factor specifically for clear cell carcinoma or is it a risk factor for just ovarian cancers in general?
A. It's a risk factor for ovarian cancer in general.
Q. There are no studies that suggest that a patient's mother's breast cancer increases her risk of clear cell carcinoma, is there?
A. Yeah, I don't -- I don't remember whether they exclude clear cell from any cancer. So when lumped into a pool, I'm not sure that you can say that it -- it doesn't have some influence. But the percentage of clear cell carcinomas -- the percentage of ovarian cancer that is -- are composed of clear cell carcinomas is small.
Q. Right.
A. So the data obviously is more predictive of serous carcinomas.
Q. Do you know why Ashkenazi Jewish ancestry increases a women's risk of ovarian cancer?
A. They have more inherited -- inherited mutations.
Q. And of course you're aware that Ms. Converse got a full panel genetic testing done; right?

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A. Correct.
Q. And would you agree that her panel testing showed that -- I'm sorry. Strike that.
Would you agree that her genetic testing failed to identify any detectable pathogenic mutations?
A. I agree.
Q. And that her -- do you agree that her genetic testing did not show any germline mutations or any other findings that are known to increase a women's risk for ovarian cancer?
A. I agree.
Q. The germline mutations that increase a woman of Ashkenazi descent's risk of ovarian cancer are included in these panel testings; right?
A. I believe so, yes.
Q. Right?
A. Of the known ones.
Q. And she tested negative for all of them; correct?
A. Correct.
Q. On page 5, under the photographs in your report, you state that areas of Ms. Converse's tumor had definitive evidence of non-neoplastic endometriotic tumor within the cystic.

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MR. DEARING: And at this point I need to take a pause. Let's go off the record for a second.
(Break taken.)
MR. DEARING: Back on the record. I'm going to mark as Exhibit 6 your Brandi Carl report.
(Exhibit 6 marked for identification.)
MR. DEARING: And Exhibit 7 is going to be the Balderrama report. Number 8 will be the Rausa report. Except that I'm missing part of it. I'm going to mark this as 8, but this is just the appendixes. The substance of his report I'll have to come back to it. Anyway, 8 will be the Rausa report.
9 will be Converse. 10 will be Gallardo. 11 will be Judkins. 12 will be Bondurant. Okay.
BY MR. DEARING:
Q. And going back to Converse now, on page 5 of your report, you state that, "Areas of Ms. Converse's tumor had definitive evidence of non-neoplastic endometriotic tissue within the cystic tumor. Is that non-neoplastic endometriotic tumor pictured in one of the pictures on page 5?
A. No, it's pictured on page 6, 7, 8 and 9.

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Q. Okay. Can I get you to use my copy of your report that's marked as Exhibit Number 9 --
A. Yes, you may.
Q. And can you -- I know you've circled it with the computer. On figure two on page 6 you state, "Low magnification view of the section of Ms. Converse's clear cell carcinoma. The circled area contains a fossa of endometriosis."
Can you be more specific in that circle and identify where the endometriosis is?
A. Yes, I can.
Q. I'm just going to watch.
A. I will point with arrows. The inside of this cystic space --
Q. Okay.
A. -- is partly depicted in the high magnification below.
Q. Okay. And which part of that circle on top is the bottom photograph? 'Cause I couldn't tell. Nothing looked oriented like that to me.
A. I believe it's near this arrow.
Q. You're pointing to the upper left-hand corner --
A. Yes.
Q. -- arrow? You say you believe. Are you

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certain that that's part of it?
A. Well --
Q. 'Cause it doesn't look like that to me, but --
A. It's within this -- it's within this cystic space for sure.
Q. Then looking -- looking at the bottom photo, can you identify the part of it that is an endometrioid epithelium?
A. Yes, I can.
Q. Could you circle what that looks like?
A. Okay. The endometriosis epithelium. You want me to circle to it?
Q. Or put an arrow.
A. It's this part over here. The entire lining of it. It's a little interrupted there, but it continues there.
Q. Okay. Actually, let's do this. Let me give you my highlighter. That might be easier now that you circled it.
A. Too late.
Q. Okay.
A. It's actually more accurate with a pen.
Q. Okay. And then can you identify the endometrioid stroma?

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A. Yes. It's most prominent over here, but it's present throughout.
Q. For the record, you're using arrows to --
A. Oh, yes.
Q. -- identify the endometrioid stroma. Okay. You can leave it there. I can see it.
A. This is the best area.
Q. You also reference on page 5, "These findings indicate that the cyst in which Ms. Converse developed clear cell carcinoma began as an endometrioma, and that her cancer arose within and from it."
Is that endometrioma tissue where the cancer arose, is that what you were identifying? I mean, have you circled that part of it or --
A. Yes, part of it. This would be -- if you looked at only this image, this cystic space here, and this higher magnification appearance, you would call that endometrioma, not clear cell carcinoma.
Q. Okay.
A. It has no feature of malignancy. It has no clear cytoplasm.
Q. And so how do you know that the clear cell carcinoma began as an endometrioma and that her cancer arose from it?

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A. Well, if you -- if you look at image figure number six -- I'm sorry, seven and eight -- we have the transition between the endometrioma and the clear cell carcinoma.
Q. Okay. Can you circle where that -- or highlight, or however you want to do it.
A. So the highlighted area is endometrioma, whereas from here on you start seeing more proliferative-type epithelium, meaning it's stratifying, becoming -- there are more cells per area. And then a few cells later, the cells start acquiring cleared cytoplasm. And then a few microns away you start getting malignant change of the epithelial cells as the nucleus and cytoplasm are cleared -- sorry -- the nucleus and large and cytoplasm cleared.
Q. Okay. On page 7 you mention hemosiderin-laden macrophages. Can you just identify where those are in figure four?
A. Yes. It's much easier in the colored photographs, but there, there, over here.
Q. Okay. How do you know that that's hemosiderin?
A. By its morphological appearance.
Q. What is hemosiderin?

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A. Hemosiderin is one of the -- the composition products of blood.
Q. So what is it about a hemosiderin that would attract a macrophage?
A. Oh, certain types of -- of ferric ions are viewed as foreign body.
Q. What's the size of those hemosiderin molecules or particles?
A. Oh, they can be tiny, sub-one micron. Seldom do they get -- would they even come close to being a micron.
Q. It's a protein, hemosiderin?
A. Yes.
Q. The endometriosis -- sorry if I missed this. The endometriotic tissue within the cystic tumor, is that on the ovary?
A. Yes.
Q. So the endometriotic tissue that got there, did it get there the same way that endometriosis occurs --
A. Yes.
Q. -- that we've been discussing? So why is it that sometimes it forms a cyst and sometimes it forms endometriosis?
A. We don't know.

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Q. Did Ms. Converse's treating pathologist make any reference to endometriotic tissue being associated with the cyst and her endometriosis endometrioid -- I mean her clear cell carcinoma?
A. She does not.
Q. But you're looking at the same slides that she looked at; right?
A. Yes. The important diagnosis is the clear cell carcinoma.
Q. But like you said before, it is also important to diagnose endometriosis or similar co-morbidities if they exist; right?
A. In my opinion, it is important, but clearly there's a clear cell carcinoma in that cyst. You can -- most pathologists will mention, you know, arising in the endometrioma. But some pathologists may not think that that's important.
Q. Did Ms. Converse's use of Johnson's baby powder impact your opinion at all in this case?
A. No.
Q. Did you make any new slides in this case?
A. I did not.
Q. Did the lawyers for Johnson & Johnson send you the tissue blocks in this case?
A. They did not.

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Q. Did you request the tissue blocks?
A. I did not.
Q. Do you intend to comment on any other slides or features that aren't articulated in your report and in those photomicrographs?
A. I do not intend to do that.
Q. Is the endometriotic cyst considered a type of endometriosis, or it's just sometimes the endometrial tissue forms a cyst and sometimes it forms an endometriosis?
A. There were several publications in the early 2000s -- actually, it was probably in the 1990s -- that suggested that endometriomas were clonal versus endometriosis not being clonal. But there were very few, and they were never followed up or confirmed. I have not done any personal research on it. So...
Q. To your knowledge, did Ms. Converse have any risk factors for endo?
A. The only risk factor for endometriosis is transverse vaginal septum or imperforate hymen. To the best of my knowledge, I don't think she had either.
Q. Okay. Moving on to Judkins. I'm sorry, let me back up. One more question on Converse.

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Did you prepare any invoices --
A. I did not.
Q. -- in Converse?
A. I have not.
Q. Okay. Does your report contain all of your opinions you intend to offer in this case?
A. Yes.
Q. Are there any materials not listed on your reference list that you're relying on for your opinions in this matter?
A. No.
Q. And what did the Johnson & Johnson lawyers ask you to do in this case?
A. They asked me to evaluate the pathology slides and determine a tumor, tumor type, tumor stage, and whether there was any foreign material that could have contributed to the genesis of the neoplasm.
Q. Incidentally, the -- in your report you say the third thing they asked you to do was provide your expert opinion on the hypothesized link between the peritoneal use of talc and the development of ovarian cancer in general, and specifically in this case. Your answer to that is always no, right, in each of these reports?

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A. Can you repeat that? I'm sorry, I was a little distracted.
MR. HEGARTY: Object to the form.
BY MR. DEARING:
Q. Sure. You start every report by saying -- by identifying the scope of the report. And you state that you were asked to provide your expert opinion on, number one, diagnosis; number two, whether there is histologic evidence supporting internal exposure to talc-based body powder; and, three, the hypothesized link between perineal use of talc and the development of ovarian cancer in general, and specifically as it pertains to Ms. Judkins' ovarian cancer case.
The answer to number three you know before you even write the first word of your report; right? I mean, it's always the same no matter what the slides show?
MR. HEGARTY: Objection to form.
THE WITNESS: That's because the slides always show an absence of tissue reaction to foreign particles in the ovaries or tubes.
BY MR. DEARING:
Q. And for that matter, the answer to number two is always the same as well, isn't it, that

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whether there's histologic evidence supporting internal exposure to talc-based body powder. If your opinion is talc can't get to the ovaries and fallopian tube, your answer's always going to be the same; right? You don't even have to look at slides?
A. Well, I'm perfectly willing to have my mind changed. To do that I must see evidence, though.
Q. Does Ms. Judkins' use of Johnson's baby powder in any way influence your opinions in this case?
A. It does not.
Q. In your opinion, was Ms. Judkins' cancer properly diagnosed by her treating pathologist, that being high-grade serous carcinoma of the right ovary?
A. Yes, it was correctly diagnosed.
Q. And do you disagree with any of the statements or opinions of Ms. Judkins' treating physicians?
A. Not that I can recall.
Q. In her brief clinical history section you state that her family history is unremarkable except for a paternal great aunt with breast cancer

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and a maternal uncle with kidney and bladder cancer. Would you agree that both of those two family cancers did not -- I'm sorry. Strike that.

Do you agree that neither of those family cancers increased Ms. Judkins' risk of ovarian cancer?

A. Agree.

Q. And she also had full panel genetic testing; correct?

A. Yes.

Q. And do you agree that the genetic testing did not reveal any germline mutations or other findings known to increase a woman's risk of ovarian cancer?

A. I agree.

Q. Do you agree that Ms. Judkins has no recognized risk factors for high-grade serous carcinoma of the ovary?

A. Other than age, no.

Q. The question was do you agree, and you said other than age, no.

A. Oh, I'm sorry. You're right.

Q. I know what you're trying to say.

A. Let me set the record straight.

Q. Did you recognize any risk factors for

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high-grade serous ovarian cancer in Ms. Judkins' medical records?

A. Only her age.

Q. I don't believe Mark would ever try to twist that statement at trial, but it won't be Mark at trial, so possibly.

You state in the first paragraph of the examination of the pathology slide section the slides revealed high-grade serous carcinoma arising in the right ovary and involving the serosa of the fallopian tube. Can you just describe what that means?

A. Yes. As you look at it in your diagram, the serosa of the fallopian tube is the outer layer of the fallopian tube, or the outside of the fallopian tube.

Q. Okay. When you say it involves that, are there adhesions of the tumor?

A. There's a tumor growing on it.

Q. Okay. Is that detached from the tumor growing on the ovary, or is the tumor so big it's touching both?

A. It's hard to say from the sections. So let's see if they describe it in the pathology report. They did not describe it. So just from

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the sections, I can't tell whether there is direct contact, direct growth, or whether it was dissemination to the surface of the fallopian tube.

Q. Okay. You go on to state that in the next sentence, the tumor exhibits areas of necrosis and aggregates of the foamy histiocytes. Those histiocytes, is that an inflammatory reaction to the dead cancer cells, the necrosis you're referring to?

A. Yes.

Q. And I should ask, the necrosis, is that necrosis of the tumor or healthy tissue?

A. It is necrosis of the tumor.

Q. I don't recall, do you know whether she had neoadjuvant chemotherapy?

A. I don't believe she did.

Q. Necrosis is something that occurs in tumors. That's just a normal process. Sometimes the cancer cells do just die at some point whether -- if they're not vascularized properly or something adequately?

A. There can be a number of reasons that tumor cells undergo necrosis. One of them is what you said, which is the theory of outgrew its blood supply. The second reason could be torsion of the

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ovary.

Q. Okay.

A. And ovarian tumors put the woman at risk -- at higher risk of ovarian torsion.

Q. Okay. You can't tell by looking at slides whether that torsion existed in this case, can you?

A. I would not be able to, no.

Q. But these aggregates of foamy histiocytes, that's an inflammatory reaction; right?

A. It is a very specific type of inflammatory reaction, yes.

Q. You go on to state that Ms. Judkins' tumor was an HGSC, high-grade serous carcinoma, of the usual type, and was not associated with granulomatous inflammation or a foreign body reaction. And I guess my question is, how do you know that?

A. Morphologically it's very, very easy to determine both granulomatous reactions -- granulomatous inflammation, excuse me -- for foreign body reactions.

Q. But if that tumor was formed by or associated with an inflammatory foreign body

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reaction, wouldn't the evidence of that be subsumed in the tumor?
A. Subsumed. You --
Q. Yeah. So the tumor is --
MR. HEGARTY: Objection. Go ahead.
THE WITNESS: Can you define subsumed?
BY MR. DEARING:
Q. So the tumor is new growth; right?
A. Yes.
Q. So if that new growth was instigated by an inflammatory reaction, say a foreign body reaction, it would grow up around it and evidence of the carcinogenesis would be obliterated; right?
MR. HEGARTY: Objection to form.
THE WITNESS: No, I don't think the tumor would destroy a foreign body reaction.
BY MR. DEARING:
Q. So in your opinion, if that tumor was initiated by a foreign body reaction, you would be able to locate the foreign body? I mean, you think it's that obvious?
A. Sure, yes.
Q. Okay. You also state that although birefringent particles can be observed in Ms. Judkins' histology slides under polarized

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light, these particles are not demonstrably within macrophages or associated with a foreign body reaction. When you say not demonstrably within macrophages, does that mean you just -- you don't see them within the macrophages?
A. Correct.
Q. Do you have an opinion as to what caused Ms. Judkins' high-grade serous carcinoma of the right ovary?
A. Yes, I believe it was a sporadic cancer.
Q. Did you make any new slides in Ms. Judkins' case.
A. I did not.
Q. Did Johnson & Johnson's lawyers send you Ms. Judkins' tissue blocks?
A. They did not.
Q. Did you request to see the blocks?
A. I did not.
Q. Do you intend to comment on any other slides or other features of any other slides in this case?
A. Only those that are present in my report.
Q. Prior to the deposition we asked that you produce invoices in this case for your work done for the Johnson & Johnson lawyers, and you did not

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produce any. That because none have been created yet?
A. You are correct.
Q. Do you know whether you retained a copy of the chain of custody forms that traveled with the slides that you reviewed for this case?
A. Very likely, but I neglected to bring it to this deposition.
Q. Okay. We can move on to Gallardo. Anybody need to take a break?
A. I'm good to go.
Q. To begin with, does your report contain all of your opinions you intend to offer in this case?
A. Yes, it does.
Q. Are there any materials not listed on your reference list that you're relying on for your opinions in this matter?
A. There are not.
Q. And what did Johnson & Johnson's lawyers ask you to do in this case?
A. They asked me to evaluate the pathology of Ms. Gallardo and to determine the type of cancer that she had, and the stage, as well as to assess whether there was any external particles that may

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have contributed to the genesis of her neoplasm.
Q. Do you believe that Ms. Gallardo's cancer was properly diagnosed by her treating physicians?
A. Yes.
Q. Do you disagree with any of the statements or opinions of any of Ms. Gallardo's treating physicians?
A. Not to the best of my recollection, no.
Q. Does the degree of usage of Johnson's baby powder by Ms. Gallardo in any way impact your opinions in this case?
A. It does not.
Q. Is it your opinion that Ms. Gallardo had stage two endometrioid ovarian carcinoma?
A. Yes.
Q. With regard to her family history, you state that her family history includes multiple myeloma diagnosed in her father, leukemia in a maternal half-brother and a maternal aunt, and kidney cancer in a maternal uncle. Do you agree that none of those family cancers contributed to cause Ms. Gallardo's stage two endometrioid ovarian cancer?
A. I agree.
Q. You're also aware that Ms. Gallardo

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underwent a full panel genetic testing?
A. Yes.
Q. And do you agree that that testing did not identify any pathogenic mutations?
A. I agree.
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. And do you agree that that panel testing failed to show any genetic mutations found that are known to increase a woman's risk of ovarian cancer?
A. I agree.
Q. Let me ask that in a different way. Do you agree that her panel testing showed that there are no genetic mutations found that are known to increase a woman's risk of ovarian cancer?
A. I agree.
Q. And I should have mentioned this, but her endometrioid adenocarcinoma was bilateral, in other words, involved both ovaries; correct?
A. Yes.
Q. You state on page 5 at the top that as with many endometrioid carcinomas, Ms. Gallardo's endometrioid adenocarcinoma occurred in the background of endometriosis best appreciated in sections of her right ovary. But there are no

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photographs in this report. Did you photograph that background of endometriosis?
A. I did not.
Q. Is that something you actually observed in her slides or something you're speculating about?
A. No, I -- I observed it.
Q. Any reason why you didn't photograph it like you did in the other cases?
A. I guess I didn't feel I needed it in this instance. It wasn't -- it was not arising directly from the focus of endometriosis. There was just the focus of endometriosis was present.
Q. Well, do you think that her endometriosis contributed to cause her endometrioid adenocarcinoma?
A. Yes.
Q. And do you agree that Ms. Gallardo's pathologist didn't make mention of this tumor occurring in the background of endometriosis?
A. (No answer given.)
Q. I'm going to go ahead and introduce Exhibit 13, which is Ms. Gallardo's surgical pathology report.
(Exhibit 13 marked for identification.)

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Q. So I'm marking plaintiff's Exhibit 13, which is the Gallardo pathology report. I think we're looking at the same report. I don't have any reason to think we're not, but I didn't see any mention of endometriosis?
A. I don't see it either. There are errors in this report. I'm pretty sure it's in this one as well. Oh. Oh, this is -- this is not nice. So in this copy that I have, this format, there is a microscopic description that contradicts the diagnosis, but it is gone from this report.
Q. Well, that's tricky.
A. Yeah, isn't it? That --
Q. Let me see if I have another copy of that report.
A. Yeah, I don't know how this -- how this was printed, but it was -- it's clearly a different -- is it a different format. It's definitely formatted differently. And the microscopic description differs between the two.
Q. Well, that's unfortunate.
A. They probably noticed it and amended the report, but they should have mentioned that.
Q. Let me just see if I have another copy.
A. While you do that, I'm going to go to the

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bathroom. I apologize.
(Break taken.)
MR. DEARING: For the record, I'm marking as plaintiff's Exhibit 14 a different copy of the pathology report that Mr. Hegerty was kind enough to share with me. And these two reports are different. There's a different entry in one section of it.
BY MR. DEARING:
Q. So Doctor, let me just get you to explain, what is the difference in these two reports? And then you can tell me what the significance is.
A. The difference in the two reports is that the microscopic description in the second copy, the one that you marked, contains a comment saying sections show high-grade serous carcinoma involving both ovaries and present on the surface of one of the ovaries. The right fallopian tube shows serous tubal intraepithelial carcinoma with invasion. This could be considered as a precursor lesion in this neoplasm.
The report that you handed me says, "Microscopic description and comment. Microscopic examination substantiates the above diagnosis." I

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notice that the -- the report -- the person responsible for the report, his name is Horacio Maluf. The comment -- microscopic description and comment -- was written by Reza Alaghehbandan. Sorry.

Q. Could this just be a mistake?

A. You want me to give you my best hypothesis of what happened?

Q. I would.

A. Yes. I believe Reza is a resident who wrote the comment. And before the -- Dr. Maluf signed off the report, and Dr. Maluf forgot to take it out before signing it out.

Q. Is it possible she's talking about a different case entirely? Because she's calling it high-grade serous carcinoma.

A. Yeah. Well, the Reza could be a man-person.

Q. Oh, true. Okay. The person.

A. What's the date of execution of this report?

MR. HEGARTY: Now you're looking at Exhibit 13; correct?

BY MR. DEARING:

Q. Well, so this one -- yeah, so this one is

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reported five days --

A. Later.

Q. The one without the comment is reported five days --

A. Later.

Q. -- later than the one with the comment. So it was taken out.

A. Yeah, it was taken out.

Q. So there was probably an error.

A. Correct. It is an endometrioid carcinoma. You asked me if I disagreed with anything in the report, and I just noticed that, and I go ipes.

Q. To be clear, you observed no serous features in these tumors?

A. I observed no serous carcinomas.

Q. All right. That was interesting.

A. Sneaky.

Q. The question that led to all of that was there's no evidence of endometriosis or no mention of endometriosis in the pathology reports; correct?

A. Correct.

Q. And you observed it but didn't photograph it?

A. Correct.

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Q. Because you didn't think it was necessary?

A. Correct.

Q. Don't you think it would be easier for us to evaluate your opinion if you took a picture of the endometriosis that you -- that this tumor is arising from?

A. It might be useful for another pathologist to confirm that.

Q. Right. Not me.

A. But that other pathologist should be perfectly capable of looking at a slide and finding it.

Q. Well, can you at least identify which slide it is you made that observation in?

A. Best appreciated in sections of her right ovary.

Q. There's probably more than one slide of the right ovary; right?

A. So it would be B18.

Q. Slide B18 shows the background of endometriosis?

A. Correct.

Q. And what does that mean that there's a background of endometriosis, just that there's an

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endometriosis present in the vicinity of the tumor?

A. In the genital tract, yes. And that those associations between endometriosis and endometrioid carcinomas and endometriosis and clear cell carcinomas all use that -- that term in the background of, meaning most of the time when a tumor arises in an endometrioma, you can't see endometrioma left in there anymore. It's overgrown by tumor.

But in some instances it's -- like two cases ago -- we can see normal endometrioma left. But if there's endometriosis elsewhere in the pelvis, the assumption is that the tumor arose in one of those fossa.

Q. Well, you go on to identify a dozen or more other organ sites in the last part of that paragraph. I'm not going to read them all, but you include the cervix, the uterus, the tubes. There was no, no endometriosis in any of those organ sites, was there?

A. No.

Q. So the only endometriosis you found was in her right ovary; correct?

A. Correct.

Q. So her right ovary, in your opinion, had

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evidence of endometriosis?
A. Yes.
Q. And it had an endometrioid adenocarcinoma as well. The left ovary did not -- did not have any evidence of endometriosis?
A. Correct.
Q. But the left ovary did have an endometrioid adenocarcinoma; correct?
A. Correct.
Q. So is it your opinion that if you find endometrioid adenocarcinoma, and you find endometriosis in her gynecologic tissue, the endometriosis must have caused the endometrioid carcinoma?
A. The endometrioid carcinoma arose in a focus of endometriosis.
Q. Okay. What does that mean? Does that mean that the endometriosis caused it, or contributed to cause it, or what?
A. It arose from it. So you don't -- you don't have it normally endometriotic tissue in the pelvis or the ovary. It's not -- normal woman don't have that.
Q. Okay.
A. There are fossa in the endometriosis, in

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the pelvis or ovary, in women who have endometriosis. Sorry, let me repeat that. There are foci in the endometriotic tissue in women who have endometriosis. If the tumor that arises in the endometrioid, it had to arise from endometriotic tissue. So that's why there's that -- that association exists.
Q. Well, the right area -- sorry. The right ovary and the left ovary are significantly anatomically apart. So my question is, how do you know that the endometrioid carcinoma of the left ovary arose out of endometriosis when they're not even near each other?
MR. HEGARTY: Objection, form.
BY MR. DEARING:
Q. In other words, there's no evidence of endometriosis in the left ovary.
A. Correct. But -- but that ovary was almost entirely replaced.
Q. So you're saying it may have been there at some point and we can't see it?
A. Correct.
Q. Okay. Can you estimate what percentage of endometrioid carcinomas occur unrelated to endometriosis?

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A. I don't believe that they do.
Q. Okay. So --
A. Either endometriosis or endometrioma.
Q. Okay. So is it your opinion that any time an endometrioid carcinoma of the ovary is formed, it has to have derived from endometriotic tissue, whether it's endometriosis or an endometriotic cyst?
A. That is my opinion.
Q. A hundred percent, all the time?
A. Yes.
Q. Do you have any source for that opinion, or is that just based on your experience?
A. There -- you mean a hundred percent of them being --
Q. Yeah. I know there are studies that show an association between endometriosis and endometrioid carcinomas. I'm not aware of a source that says that all endometrioid carcinomas are formed from endometriotic tissue, whether it's --
A. Yeah, I -- that is such an obvious deduction that I'm not sure anybody would have bothered to publish it. It's just because tumors arise from epithelium, whatever epithelium, right? It has to arise in the epithelium that gives it its

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histogenesis. So serous carcinomas arise from the serous cells in the fallopian tube, whether it's in the fallopian tube itself or whether the serous cells get into the ovary. Endometrioid tumors have to be -- have to arise in endometriotic tissue.
Q. Okay. So the term endometrioid isn't just describing the morphology or what the cells look like, it's actually describing the origin cells?
A. Yes.
Q. Okay. On page 8 of your report where you are discussing Dr. Godleski's findings --
A. Yes.
Q. -- at the top you say, "The only foreign particles photographed by Dr. Godleski that cannot be dismissed as processing artifact are those within macrophages of the right iliac lymph node," which is the same location we talked about earlier; right?
A. Yes.
Q. And you actually observed those particles yourself in macrophages in the slides?
A. Yes.
Q. And the right iliac lymph node drains from the pelvis; right?

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A. Or external genitalia and upper thigh as well.
Q. Can you describe how -- Well, strike that.
You go on to say that none of the other birefringent material in figure two is present within the cytoplasm of macrophages or any other cell type. And none of this material is associated with a foreign body reaction which is consistent with simple postsurgical contaminant introduced in the specimens when the tissues were surgically removed from Ms. Gallardo and then handled, grossed, and processed for histology review.
Further, the foreign particles shown in the bottom right panel of figure two are not associated with chronic inflammation as claimed by Dr. Godleski.
In your opinion, what is shown in figure two that you're describing right there?
A. An aggregate of cells that I'm not sure what they are from the photograph.
Q. Could they be macrophages?
A. They don't look like macrophages, no. They look like either epithelial cells or

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lymphocytes.
Q. And do they have birefringent particles in them or associated with them?
A. They're associated with them. I don't think they're in them. There's several particles that are clearly outside of any cytoplasm, just lying on the tissue.
Q. You say, "The photographed cells are polymorphonuclear leukocytes."
A. Okay. So it's acute inflammatory cells. I must have written that by looking at the microscopic section rather than -- than the photograph.
Q. Those are acute inflammatory cells?
A. Correct.
Q. Can you describe what mechanism distinguishes between just your normal inflammatory reaction and an acute reaction? Is that because of the volume or the number of cells?
A. No, it's the type of cell. So --
Q. Right.
A. -- a polymor --
Q. Go ahead. I'm sorry.
A. A polymorphonuclear leukocyte is a very specific type of cell. It differs completely from

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a macrophage or a lymphocyte.
Q. But what determines whether the response is a PMN or whether it's a macrophage?
A. PMNs are -- have a nonspecific response to -- usually to bacteria, but they could also be present after tissue injury, whereas macrophages are much more specific molecules that are attracted by -- by signals from the -- from the surrounding tissue.
Q. Do the PMNs appear to be associated with those particles?
A. Yeah, they are clustered together with these particles.
Q. Do you think the particles attracted the PMNs?
A. I doubt it.
Q. Or are the PMNs responding to the presence of the particles?
MR. HEGARTY: Objection to form.
THE WITNESS: I think their clustering is coincidental, to tell you the truth.
BY MR. DEARING:
Q. I guess anecdotally, if you have a cluster of foreign particles such as in that diagram, wouldn't that attract PMNs?

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A. No. I mean -- no. So it would attract macrophages if they were there while the tissue was vital.
Q. So you think it's just coincidence that the PMNs exist in that space and the particles just landed on top of them --
A. Yeah. I mean --
Q. -- but nowhere else?
A. Well, no, that's not true. They're scattered --
Q. There are a few others --
A. Yeah.
Q. -- but they're definitely gathered up on top of it.
A. Yeah. And it may be that the PMNs are a little stickier.
Q. Okay. How do the PMNs differ in appearance from macrophages?
A. PMNs have a lobulated nucleus, usually three distinct lobules. The macrophage nucleus is round and single.
Q. Okay. Did you identify any risk factors for Ms. Gallardo that may have contributed to cause her ovarian cancer?
A. Other than her age, no.

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Q. Did Johnson & Johnson's lawyers send you any of Ms. Gallardo's tissue blocks?
A. They did not.
Q. Did you ask to see any of her tissue blocks?
A. I did not.
Q. Do you intend to comment on any other slides other than B18 that you discussed previously --
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. -- during your testimony at trial.
A. Well, I intend to discuss all of the slides in her case.
Q. Did you take photos of any of the slides?
A. I did not.
Q. Have you produced any invoices in this case?
A. I have not.
Q. And to your knowledge, did you retain any of the chain of custody documents?
A. Again, likely, but I didn't bring it to the deposition by omission.
Q. Okay. We're going to Ms. Bondurant. First off, does this report contain all of your

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opinions that you intend to offer in this case?
A. It does.
Q. Are there any materials not listed on your reference list that you're relying on for your opinions in this case?
A. I am not.
Q. And what did the Johnson & Johnson lawyers ask you to do in this case?
A. They asked me to examine Ms. Bondurant's pathology slides and determine what kind of tumor she had, and what stage it was, and if there were any foreign material that could have contributed to her tumor.
Q. In your opinion, did Ms. Bondurant's doctors properly diagnose her cancer?
A. Yes.
Q. Do you disagree with any of the statements or opinions of Ms. Bondurant's treating physicians?
A. May I modify my answer to that?
Q. Of course.
A. They -- the doctors at Tulane, the pathologists there, called it high-grade carcinoma with clear cell features. I went a little bit further than that and called it clear cell

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carcinoma.
Q. Is there a distinction?
A. Some people believe that you can have tumors with clear cell features that are not clear cell carcinomas or pure clear cell carcinomas. In this instance, all I had was one needle core biopsy, and the entirety needle core was, in my opinion, clear cell carcinoma.
Q. Okay.
A. To answer your second question, I did not disagree with any of her clinical doctors.
Q. Okay. Near the bottom of page 4 you say, "On 3/28/19, a CT-guided needle biopsy of a possible liver mass reported metastatic high-grade clear cell adenocarcinoma consistent with Mullerian origin." Is that a metastasis from the ovarian cancer?
A. Yes.
Q. Is that what that's from? On the next page you describe her family -- her medical history as significant for tubal ligation, hysterectomy for fibroid uterus and endometriosis, and three C-sections. In your opinion, did anything in that medical history contribute to cause her clear cell carcinoma?

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A. Yes, her endometriosis.
Q. Do you believe that all clear cell carcinomas are caused by endometriosis?
A. They're not caused by it. They arise from it.
Q. Okay. So your opinion is that all endometrioid ovarian carcinomas and all clear cell ovarian carcinomas arise from endometriosis?
A. Endometriosis or endometrioma.
Q. Without exception?
A. In my mind, without exception.
Q. Her family history includes ovarian cancer from of a maternal great aunt, breast cancer of a mother and maternal aunt, and prostate or pancreatic cancer from a maternal uncle, non-Hodgkin's lymphoma from a brother, lymphoma of a maternal grandmother, lung cancer from a brother and other relatives, throat cancer from an uncle.
In your opinion, did any of those family cancers contribute to cause her clear cell carcinomas?
A. Well, her history of -- of ovarian cancer and maternal great aunt breast cancer and mother and maternal aunts would seem to -- would increase the risk that she would develop ovarian cancer.

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Q. Well --
A. That's one first -- one first-degree and two second-degree relatives.
Q. Right. Do you know whether -- well, first of all, you don't know the histology or the subtype of ovarian cancer that her maternal great aunt had, do you?
A. I do not.
Q. Do you know whether if it was serous carcinoma, which would make up a significant percentage of the ovarian cancers, if her maternal great aunt had the most common ovarian cancer, serous carcinoma, would that have contributed to cause her endometriosis in your opinion?
MR. HEGARTY: Objection to form.
BY MR. DEARING:
Q. Or put her at greater risk of endometrioid carcinoma? Let me start over.
A. Clear cell carcinomas.
Q. Let me start that all over. You can tell it's the last one.
Is it true that we don't know what type of ovarian cancer Ms. Bondurant's maternal great aunt had?
A. That is correct.

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Q. You agree that by far the most common type of ovarian cancer is serous ovarian cancer?
A. Agree as well.
Q. If she had -- the maternal great aunt had serous ovarian cancer, would that have increased Ms. Bondurant's risk of getting clear cell carcinomas?
MR. HEGARTY: Objection, form.
THE WITNESS: The -- the studies associating family history to ovarian carcinoma does not divide those carcinomas by cell type. They just say increase the risk of ovarian cancer. Again, because clear cell carcinomas constitute such a small percentage of ovarian carcinomas, it would be extremely difficult to ascertain whether there is an received risk of those or not.
So the only statement that I can make is that it puts Ms. Bondurant at an increased risk for ovarian cancer. And that's as specific as I can get.
BY MR. DEARING:
Q. But it seems to me if all clear cell carcinomas arise from endometriosis, how could a family history of a great aunt's ovarian cancer increase her risk of getting that clear cell

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carcinoma from that endometriosis?
A. I -- family history doesn't specify a mechanism. So it just basically says you're more likely to get cancer.
Q. Do you believe clear cell carcinomas are influenced by hormones? Carcinomas of the ovary.
A. They should not.
Q. Typically -- is it fair to say that typically they are not?
A. Correct.
Q. And to be clear, none of those other cancers mentioned in her family history, other than her mother's and her maternal great aunt's, are likely to have contributed to her clear cell carcinomas; right?
A. Correct.
Q. Moving down to the next section where you examined the pathology slides, there was one slide available for review; correct?
A. That is correct.
Q. Did that one slide have any evidence of endometriosis in it?
A. No.
Q. So your opinion that Ms. Bondurant's clear cell carcinoma arose from endometriosis is

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based solely on the fact that, in your opinion, all clear cell carcinomas arise from endometriosis; correct?
A. Well, it also derives from her own personal history of having endometriosis.
Q. Right. Okay. But you saw no evidence of endometriosis in that slide that you studied?
A. In that one needle core biopsy, no. By the way, there were more than one slide, but they were recuts that were stained for immunohistochemistry. So --
Q. Do you know how many slides you reviewed in all? I couldn't really tell --
A. Seven, including the H&E.
Q. Okay. You state that the morphologic and immunohistochemical findings are diagnostic of a clear cell carcinoma of Mullerian origin. What does Mullerian origin mean?
A. The Mullerian tract is the embryologic origin of the fallopian tubes, uterus, cervix, and vagina.
Q. Embryologic? In other words --
A. Yes.
Q. -- formed as an embryo?
A. Yeah. So how can I describe this? The

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embryo starts forming structures in its abdomen, okay? There are two major tubal systems, systems of tubes. One of them is the Wolffian duct. The Wolffian duct gives genesis to the kidneys, ureters, bladder, and in the male -- both male and female -- to the rete testes in the part of the male, rete ovaria in the part of the female, as well as the epididymis in the male, or the mucinous breast in the female, and then the vas. All of those arise from the Wolffian -- I'm sorry -- from the Wolffian duct.

The Mullerian duct, which exists only in the women, gives genesis to the fallopian tubes, the uterus, the cervix, and the vagina. So when you say Mullerian origin, it means it was either a vaginal/cervical/uterine or fallopian tube epithelium origin.

Q. So it was deriving from those organs.

A. The cell types of those organs.

Q. Right. But not in utero; right? I mean, it was as a mature adult.

A. You're correct.

Q. You're just describing the organs from which it derived.

A. Right. And the reason you use Mullerian

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origin is to distinguish it from clear cell carcinomas of the kidney.

Q. So even though it's of Mullerian origin, how does the Mullerian origin relate to the background of endometriosis?

A. Endometriosis is Mullerian origin.

Q. As well.

A. As well.

Q. Okay. If there were blocks available in this case, you would not have looked at them, would you?

A. I would not have.

Q. Nor would you have asked for them?

A. No.

Q. When you say that -- on page 7 you state that this clear cell carcinoma arose within the background of preexisting endometriosis. That's based solely on the medical history that she had endometriosis in the '80s, and then the fact of your opinion that all clear cells arise from endometriosis?

A. Correct.

Q. Okay. Endometriosis does resolve sometimes, doesn't it?

A. Almost never.

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Q. So if a lady gets it in -- you know, in the '80s, she is likely to still have it in 2020?

A. Yes. It can -- it can become dormant, not cause symptoms. And part of the therapy for symptomatic endometriosis is to various -- they use various tactics, most of them hormonal -- either give the woman a lot of progesterone to stop the proliferation and attempt to put it into a dormant condition. There are some people who give chemical castration drugs to have the ovaries not secrete any estrogen. So -- so it can -- it can be put to sleep or become less symptomatic. And in some women, it stays dormant. In most women, it does not.

Q. And by not being dormant, you mean that once the endometrial cells relocate to some organ where they shouldn't be, they then replicate where they are?

A. Again, they can in some -- in some people there's tiny foci. In other women, there's many large foci. It's really dependent on the case. There's a lot of variation.

Q. Did you generate any invoices in the Bondurant case?

A. I did not yet, no.

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Q. And do you know whether you retained a copy of the chain of custody for the slides?

A. Almost without question. I just neglected to bring it to this deposition.

MR. DEARING: All right. We can take another break, and then I'll just look at my notes and see if I forgot anything.

(Break taken.)

MR. DEARING: I don't have any other questions.

E X A M I N A T I O N

BY MR. HEGARTY:

Q. Good afternoon, Dr. Felix.

A. Good afternoon.

Q. I have some follow-up areas that will track Mr. Dearing's examination of you over the last several hours.

You were asked about whether, in your current practice, you meet with patients to discuss your review and analysis of their tissue or their cytology. But do you -- and you mentioned that you typically do not meet with the patients, or rarely have met with the patients that you've -- since you've been at the Medical College of Wisconsin; is that correct?

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A. Correct, yes.
Q. But with regard to their treating physicians, do you regularly interact with the doctors who are treating the patients for their ovarian and other gynecologic cancer with respect to your review and analysis of their tissue or cytology?
A. Yes, almost on a daily basis.
Q. Can you describe for us just briefly how those interactions occur, or what transpires?
A. They can occur -- a law went into effect that the minute you enter a medical record, it must be accessible to the patient. Patients have software called MyChart. So every time that there's cancer, and I look into the provider and it's not an oncologist where I know that the person's expecting a cancer diagnosis if they went to an oncologist -- but for every general gyn will get a phone call from me to discuss the case. And it usually involves a little education, because general ob/gyns are not very familiar with malignancies.
So that's the number -- most common interaction that I have. And that occurs almost on a daily basis. Then I discuss cases at the time of

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tumor board. And -- and in those tumor boards I very frequently will -- will make observations that aren't -- my observation's intended to make the clinician do something that they weren't planning on doing. So I interact a lot with them.
Q. Can you give us an example of where your comments at a tumor board may lead the clinician to do something that they weren't planning on doing?
A. Yes. So the pathology report, the last one that I remember, it was squamous cell carcinoma. Maximum depth of invasion point was one millimeter. But then it was present at the margin.
And when they were discussing the case they said, oh, it's one millimeter. We can just do a simple hysterectomy. Oh, no, no, no, no, no. It's one millimeter, but it could be much, much deeper because it's at the margin. So basically I went -- I basically asked them, to be completely safe and not do a cut-through hysterectomy, you should probably do a cold biopsy. So I strong-armed them into doing a cold biopsy.
Q. You indicated earlier in your testimony that as a general rule you do not use polarized light microscopy when you're looking at a tissue removed from a patient that potentially has ovarian

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cancer and making that diagnosis.
When, over the course of your career, when and in what circumstances do you use polarized light microscopy?
A. I use it every time I have granulomatous inflammation or an unusual grouping of macrophages. In both of those situations, I will polarize the tissue.
Q. You indicated that you're not currently working on any publications that discuss ovarian cancer, but what are you doing on a weekly basis with regard to reviewing and diagnosing ovarian cancer?
A. Currently I'm the only gyn pathologist at MCW, so I see every ovarian cancer that comes out. I see actually all of the gyn pathology samples that come out of the ORs, or clinics. So I'm getting help, thank goodness. I'm getting two people who are fellowship trained in gyn. So that will provide some relief. But I expect one of them, at least, to show me everything.
Q. Approximately how many new ovarian cancer cases do you diagnose on a weekly basis?
A. It varies from week to week, but I would say that an average of two to three a week.

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Q. And with regard to those two to three a week over the course of the month, which would add up to be maybe twelve, are some of those the type of cancer we've been talking about today, serous endometrioid and clear cell?
A. Yeah, most of them are serous. We do get a fair amount of clear cell in Wisconsin for some unusual reason.
Q. You were asked by Mr. Dearing, counsel for the plaintiffs in these cases, about the known causes of ovarian cancer. And you talked about gene mutations, and then later on you started discussing with regard to the individual patients' endometriosis. Is endometriosis a known cause of certain types of ovarian cancer?
A. It is not the cause of ovarian cancer. It is the tissue of origin of ovarian cancer.
Q. That may be the better way to put it. When you talked to us earlier about clear cell and endometriotic endometrioid carcinomas arising out of endometriosis or an endometriotic cyst; is that correct?
A. That's correct, yes.
Q. In one instance you showed us that, but is this arising out of a -- a trans --

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A. Transition?
Q. -- transition of endometriosis or of endometriotic cyst to either clear cell or endometrioid carcinoma?
A. Correct.
Q. Also cancer of the ovary, as we talked about with regard to Ms. Balderrama, can be a metastasis from uterine cancer; correct?
A. Correct.
Q. And with regard to these origins of ovarian cancer, you talked about those, including gene mutations in your reports; correct?
A. Yes.
Q. You were asked some questions about reactive oxygen species. With regard to reactive oxygen species, are those created by the body in response to exercise, for example?
A. You can -- you can get reactive oxygen species because of exercise, yes.
Q. I guess put it another way: Reactive oxygen species are a normal part of human physiology, and the body then deals with those reactive oxygen species -- let me start over again. Reactive oxygen species are a normal part of human physiology; correct?

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A. Correct.
Q. You were asked about whether you'll offer opinions regarding the epidemiologic literature as it relates to talcum powder use and ovarian cancer. To the extent that you would offer such opinions, those are set out in your expert reports for the cases we talked about today; correct?
A. Correct.
Q. You were asked about the type of inflammatory response that foreign particles, including talc, can cause in tissue. And those are, as you identified, granulomatous for foreign body response. Recall testifying to that?
A. Yes.
Q. You were also asked about whether you had reached any conclusions prior to being contacted by Johnson & Johnson's counsel with regard to any relationship between talc and ovarian cancer. Certainly prior to being contacted by counsel for Johnson & Johnson you were aware of the process we just talked about of the body forming a -- or having a foreign body or granulomatous response to particles in tissue; correct?
A. Yes.
MR. DEARING: Object to form. Leading.

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BY MR. HEGARTY:
Q. Were you also aware that such a response does not cause any form of cancer?
MR. DEARING: Objection, form.
THE WITNESS: Not to my knowledge.
BY MR. HEGARTY:
Q. So prior to being contacted by counsel for Johnson & Johnson, it was your belief and understanding that granulomas and foreign body responses don't increase the risk of cancer or cancer does not develop from such a response; correct?
MR. DEARING: Objection to form. Leading.
THE WITNESS: Correct.
BY MR. HEGARTY:
Q. And that your opinions in these cases that talcum powder use does not cause ovarian cancer are based on all of the authorities you cite in your reports, which include the epidemiologic studies, the cell studies and animal studies; is that correct?
A. Yes.
Q. You were asked about a type of long-term destructive inflammation that has been linked to

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certain types of cancer. Can you describe for us what that long-term destructive inflammation looks like?
A. Yes. So in that long-term inflammation you get constant tissue destruction and constant tissue regeneration. And it is that regeneration that prompts or makes mutations more likely.
Q. And is that constant destruction and regeneration visible under the microscope?
A. It's very easily visible.
Q. And what cancers are associated with that kind of destruction that happens from long-term -- certain types of long-term inflammation?
A. The best known are colon cancers arising in ulcerative colitis, where the inflammatory response constantly destroys the colonic mucosa. And eventually I think the risk of developing colon cancer up to age 60 is, like, 95 percent. So almost a certainty.
Q. Okay. And in the pathology slides you look at on a daily basis, are you looking for that and other types of inflammation, including that could be characterized as -- as a foreign body response or a granulomatous reaction?

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A. Yes. Again, the reason for that is granulomas can be foreign body granulomas, but they can also be infectious granulomas. And it's very important to identify the infectious ones.
Q. You were asked some questions by Mr. Dearing about whether you had seen reports of asbestos in talcum powder. Do you recall those questions?
A. Yes.
Q. I believe you had indicated, in response to at least one of those -- one of the questions in this line of questions, that talcum powder probably did contain some level of asbestos. You were not talking about Johnson's baby powder; correct?
MR. DEARING: Objection, form.
THE WITNESS: I was not talking about any specific brand of talcum powder.
BY MR. HEGARTY:
Q. You have never seen reports of Johnson's baby powder containing any levels of asbestos; correct?
MR. DEARING: Objection, form.
THE WITNESS: I have -- I don't recollect ever seeing a report saying that Johnson's product, Johnson & Johnson baby powder, had asbestos.

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BY MR. HEGARTY:
Q. And it's not your opinion in these cases that Johnson's baby powder has ever contained any amount of asbestos; correct?
MR. DEARING: Objection, form.
THE WITNESS: It is not my opinion.
BY MR. HEGARTY:
Q. In fact, when you were talking about reports of asbestos in talc, you made specific reference to the IARC monograph talking about -- or the IARC monographs you had read; correct?
A. Correct.
Q. And in those IARC monographs, they don't specifically refer to the source of the talc that they're talking about; correct?
A. That is correct as well.
Q. When you were talking about the asbestos in talc, you were talking about over the course of the -- the use of talc at whatever -- whatever standards that -- whether it's industrial or other standards -- that you have seen reports and perhaps did believe as to certain of those reports, that some types of talc over the years have contained some amounts of asbestos?
A. Correct.

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Q. You were asked about the anatomical descriptions of the reproductive tract shown in Exhibits 3 and 4. Do we have Exhibits 3 and 4 there? Now, with regard to those anatomical descriptions in those exhibits --
A. This is 1 and 2.
Q. I'm sorry, 1 and 2. You were asked about the anatomical diagrams shown in Exhibit 1 and 2. Do each of those anatomical diagrams show a vagina that's open like an open tube?
A. Yes.
Q. Is that a proper anatomical description of what the vagina looks like?
A. It is not.
Q. Okay. What does the vagina look like?
A. The vagina is a potential space. So the walls of the vagina touch each other.
Q. The anatomical description marked as Exhibit 1 and 2 also show an open uterine cavity, and also show an open fallopian tube. Is that what they appear in real life?
A. No. The endometrium touches -- the anterior endometrium touches the posterior endometrium. So again, it's a potential space.
Q. With regard to the fallopian tube, it's

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not a clear tube like a straw; correct?
A. Correct. It's full of fimbriae -- plica, which is the mucosa of the fallopian tube.
Q. You were asked about Exhibit Number 3, which is one of the McDonald studies.
A. Yes.
Q. If you could find Exhibit Number 3 there. I have just a couple of follow-up questions.
With regard to Exhibit Number 3, the McDonald study, is Dr. Godleski and his co-authors doing the same thing -- reporting on the same thing in this study that Dr. Godleski reported on in a number of the cases we talked about today?
MR. DEARING: Objection, form.
THE WITNESS: I'm sorry, can you repeat that question?
BY MR. HEGARTY:
Q. Sure. Is what Dr. Godleski and his co-authors are doing in this study essentially the same thing that Dr. Godleski has done in his reports for a number of the cases we talked about today?
A. Yes.
MR. DEARING: Objection, form.
BY MR. HEGARTY:

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Q. In other words, did he essentially apply the same methodologies in this McDonald study as he applied in the reports that we talked about today?
A. That is correct.
Q. And is it your understanding that in the McDonald study, he reported on five patients who are also litigation plaintiffs in cases involving talc and ovarian cancer?
MR. DEARING: Objection, form.
THE WITNESS: I've been informed of that, yes.
BY MR. HEGARTY:
Q. As in his reports, Dr. Godleski and the co-authors don't show any particles identified -- don't prove that any particles -- let me start over again.
With regard to Dr. Godleski's and his co-authors in the McDonald paper, they do not show that any of the particles that they identified by PLM are talc; correct?
A. Correct.
Q. That's also what -- that's also the same thing that Dr. Godleski says in the cases we talked about today, that the -- that he cannot identify the particles he reports on as being birefringent

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by PRM talc. You understand that?
A. Yes.
Q. And with regard to your response to the McDonald study, does that -- does your response track your response to what Dr. Godleski has done in all the reports we talked about today?
MR. DEARING: Objection, form.
BY MR. HEGARTY:
Q. Does that make sense?
A. Yes.
Q. In the McDonald study, did Dr. Godleski or his co-authors report on any foreign body response or granulomatous to any particles?
A. The only foreign body response would be phagocytosis of particles by macrophages.
Q. Did he and his authors report any granulomatous or foreign body giant cells?
A. They did not.
Q. And with regard to the particles that you identified as being in macrophages in the cases we talked about today, those particles cannot be identified as talc; correct?
A. Correct.
Q. You were also asked about Dr. Godleski's plus or minus five percent factor in identifying

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talc in tissue. Have you seen that plus or minus five percent variance used by any other author in any other published, peer-reviewed publication?
A. Not that I'm aware of, no.
Q. You were asked about whether you would have opinions about asbestos and whether it can cause ovarian cancer, and you provided those opinions to Mr. Dearing. If you pull out just one of your reports -- it can be the Carl report.
A. Okay.
Q. If you turn over to page 5. In footnote two, you specifically reference a couple of authorities that you rely upon, among others, for your opinion that asbestos exposure does not cause ovarian cancer. Those authorities are particularly the Reid 2011 paper and the Slomovitz 2020 paper?
A. Correct.
Q. You were asked about your lab and the extent of any asbestos in that lab. And you talked about the potential for asbestos in your lab.
Are you able to say that the laboratories that process the tissues that we've talked about here today have the same, perhaps, limitation of asbestos as your lab does here?
A. Yes. Asbestos is pretty much everywhere.

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Q. But can you -- I know you can talk about your -- the asbestos potential for your lab here in Wisconsin, but can you talk about the asbestos potential in the labs of the -- of the hospitals that processed the tissues that we've been talking about here today?
A. I can.
Q. Have you -- have you been in each of those labs?
A. I have not.
Q. So are you able to comment about those labs as you're able to comment here about your lab?
A. Yes. In general, all laboratories suffer from the same condition. Construction will inevitably leave trace asbestos fibers behind.
Q. And some labs may have more asbestos fibers than others; correct?
A. They may, uh-huh.
Q. It can depend on the age of the laboratory; correct?
A. Yes.
Q. It can depend on the level of construction that has gone on in and around the hospital complex where the lab is; correct?
A. Correct.

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Q. You were asked about whether you were challenging Dr. Godleski's finding of talc by SEM and EDX, that is, are you saying that he misidentified the particles as talc. But are you -- but are you challenging in these cases his conclusions that whatever he has seen came from the patient's use of Johnson's baby powder?

MR. DEARING: Objection, form.

THE WITNESS: Can you repeat that -- rephrase it?

BY MR. HEGARTY:

Q. Sure. Do you remember being asked about whether you're taking issue with Dr. Godleski's finding of talc in tissue, that is, saying that he misidentified the particles as talc. Do you remember being asked those questions?

A. Yes.

Q. But are you challenging, though, Dr. Godleski's conclusions from those findings that the particles he has seen came from the patient's use of Johnson's baby powder prior to their surgery?

A. I am challenging that, yes.

Q. And as far as the particles that Dr. Godleski did detect by SEM EDX, whether they're

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talc or otherwise, in your opinion, where did those particles come from?

A. They likely came from processing.

Q. And in particular, as far as likely coming from processing, your reports say that that processing includes the handling, grossing and the -- and preparing the slides using molten paraffin wax; correct?

A. Correct.

Q. You were asked, as we talked about each of the plaintiff's cases today, what you were asked to do by Johnson & Johnson's counsel. And in each case does your report set out on the very first paragraph what you were asked to do?

A. Yes.

Q. And then does the report that follows flow from what you were asked to do?

A. Yes.

Q. You were asked in each of these -- as to each of the cases whether the plaintiff's use of Johnson's baby powder was necessary for your opinions in this case. In each of the -- in each case we talked about here today, did you read the plaintiff's deposition testimony?

A. Yes, in most of them.

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Q. That would include any patient's description of their baby powder use; correct?

A. Yes, it -- I was asked whether it mattered to my opinion, and I said no.

Q. And why does it not -- why does the specifics of each of the patient's use of Johnson's baby powder not matter to your opinions?

A. Because I don't find talcum powder associated with a foreign body reaction in any of them. So it doesn't matter to me whether they used a little or a lot. To me, nothing got up.

Q. You had mentioned that particles greater than five microns or greater will cause a granulomatous reaction; is that correct?

A. Correct.

Q. And in fact in some of the cases we talked about, Dr. Godleski in his images showed particles that sometimes were well in excess of five microns?

A. Correct.

Q. And in any of those cases were -- was there a granulomatous reaction?

A. No.

Q. What does that tell you?

A. It tells me that that particle was not

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there while the organ was vital.

Q. You were asked about the invoices in Exhibit Number 4. Were some of the items that you invoiced in Exhibit Number 4 your expenses?

A. Yes.

Q. Is that simply paying you back for expenses that you incurred?

A. Yes.

Q. As to Ms. Balderrama, you were asked about the basis for your conclusion that her -- that the carcinoma found in her ovary was a metastasis from the endometrium. Do you recall being asked about that?

A. Yes.

Q. Do those bases include her clinical history of having complex hydroplasia? And feel free to look at your report.

A. No, I'm very aware of that. But yes, I mean, meaning that -- that her endometrial cancer started in her uterus, yes.

Q. And is having a clinical history of complex hyperplasia consistent with her ultimately developing endometrial carcinoma?

A. Yes, complex hyperplasia with atypia is the precursor lesion to endometrial cancer.

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Q. Do you also base your opinions that Ms. Balderrama's ovarian tumor was a metastasis from her endometrial tumor on the medical literature that discusses simultaneous endometrial and ovarian tumors?
A. Yes.
Q. And does that include the medical literature that has looked at the molecular genetic data? In particular you make reference in your report about that in the last ten years, molecular genetic damage has accumulated to support the current understanding that the vast majority of these synchronous primary tumors are clonal in nature and represent metastatic endometrial cancer. You cite Verrick, among other authorities.
Are you also relying on those authorities for your opinions as to Ms. Balderrama?
A. Yes.
Q. You were asked some questions about the 2020 O'Brien study. Do you recall being asked about that study?
A. Yes.
Q. In particular you were asked about the sister study part of O'Brien 2020. Do you recall that?

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A. Yes.
Q. Does O'Brien 2020 also include as its -- its data data from the women's health initiative and the nurses' health study?
A. It does.
Q. So does O'Brien -- do the inclusions from the -- by the O'Brien authors include the sister study -- or stem from their review of the sister study, women's health study, and women's health initiative data?
A. Correct.
Q. You were also asked questions as to each plaintiff we talked about today as to the cause of that plaintiff's cancer. Do you recall those questions?
A. Yes.
Q. And does your report -- or do your reports in these cases set out your causation opinions?
A. Yes.
Q. And is one of those opinions that talc use did not play a role in the development of each plaintiff's ovarian cancer?
A. Yes.
Q. And where indicated in your reports, was

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the -- the diagnosis of endometriosis -- or let me ask it a different way.
Where indicated in your reports in those patients that had clear cell endometrioid carcinoma, did those cancers arise out of endometriosis in each case?
A. Yes.
Q. And is it your opinion in each case that the etiology of the endometrioid and clear cell carcinomas was endometriosis?
A. Yes.
Q. And with regard to what you were asked to do in this case, were you asked to review all the medical records and comment on or provide testimony about all of the plaintiffs' medical conditions and risk factors?
A. I -- I mean, I did it. I tried to do it.
Q. But were you specifically asked to take an in-depth look at all the risk factors of each plaintiff, look at all the medical records, and comment on each potential risk factor?
A. No.
Q. So to the extent that a plaintiff in these cases has a genetic mutation or other recognized risk factor that should be considered in

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determining the etiology of that plaintiff's cancer, you were not asked to consider and provide testimony about such factors -- such risk factors beyond what's in your report; correct?
MR. DEARING: Objection, form. Leading.
THE WITNESS: Correct.
BY MR. HEGARTY:
Q. And with regard to the variants of unknown significance that we talked about in some of the reports, does that mean that the data is not -- is just not sufficient yet to determine whether those variants are associated with an increased risk of ovarian cancer?
A. That is correct. Usually it means there's insufficient data.
Q. And do any of the tests that we talked about here today, that is the genetic tests, rule out that the patient had a genetic mutation that, whether known or unknown, that could be related to their developing ovarian cancer?
A. It does not rule it out completely, no.
MR. HEGARTY: Let's go off the record. Give me about five minutes.
(Break taken.)
MR. HEGARTY: Those are all the questions

I have for you, Dr. Felix. Thank you.

E X A M I N A T I O N

BY MR. DEARING:

Q. I just have one. You mentioned that when you observed granulomatous inflammation in slides, that's when you decide to polarize them. Why do you polarize them?

A. Because if it's a foreign particle, I don't have to do infectious disease stains.

Q. So if it polarizes, that tells you it's a foreign particle?

A. It's a foreign body granuloma, yes.

Q. There are lots of foreign particles that don't have birefringence properties, though; right?

A. I beg your pardon?

Q. There are lots of foreign particles that aren't birefringent; right?

A. Correct. If they -- they usually will be visible by H&E, the ones that are not refringent. But if they're not visible by H&E, and they're not refringent, then I'll get the stain.

MR. DEARING: Okay. That's all I have.

MR. HEGARTY: Thank you. We will read and sign.

(Deposition concluded at 5:12 p.m.)

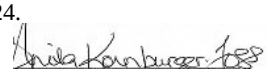
STATE OF WISCONSIN)
) ss.
COUNTY OF MILWAUKEE)

I, ANITA KORNBURGER, Registered Professional Reporter and Notary Public in and for the State of Wisconsin, do hereby certify that the preceding deposition was recorded by me and reduced to writing under my personal direction.

I further certify that said deposition was taken at 8701 Watertown Plank Road, Milwaukee, Wisconsin, on June 22, 2024, commencing at 9:08 a.m. and concluding at 5:12 p.m.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, or a relative or employee of such attorney or counsel, or financially interested directly or indirectly in this action.

In witness whereof, I have hereunto set my hand and affixed my seal of office at Milwaukee, Wisconsin, this 11th day of July, 2024.



ANITA KORNBURGER, RPR - Notary Public

My commission expires May 24, 2025.

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I declare under penalty of perjury that I have read the entire transcript of my deposition taken in the captioned matter or the same has been read to me, and the same is true and accurate, save and except for changes and/or corrections, if any, as indicated by me on the DEPOSITION ERRATA SHEET attached, with the understanding that I offer these changes as if still under oath.

Signed on the _____ day of _____, 2024.

_____

Juan Felix, MD

q

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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